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# A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS CLEANINGS BEE CULTURE ILLUSTRATED SEMI-MONTHLY Published by THE A. ROOT CO. \$1.00 PER YEAR MEDINA, OHIO.

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J. O. GRIMSLEY says in *Ruralist* that there are various causes for mailed queens giving way early, the main one being balling when introduced.

WEISELRICHTIG is a word the Germans use to signify that a colony has a good laying queen. It would be convenient if we could express the same thing in a single word.

THE MOST PROMINENT feature of November *Review* is the absence of Hasty. Hope he hasn't been carrying his dietetic experiments too far. His writings are always refreshing.

SPEAKING OF wild ground-cherries, friend A. I., I once had some dried in my pocket that tasted very much like figs. I never could repeat it, but I believe some one who knew enough might.

W. W. SOMERFORD's plan of ventilation, p. 875, by raising the cover, is intended by him "for extracted honey." A caution may be necessary to prevent any one from trying it with comb honey. Sections near the opening would not be promptly sealed.

MR. HOOKER reports in *British Bee Journal* that he boiled *in vacuo* thin honey beginning to ferment. The ferment was removed without hurting the aroma, and the honey became thick and of good quality. Possibly that's no better than to give the honey its time on the reservoir of a cook-stove.

TWENTY PER CENT more honey is needed to winter in a frame hive than in a skep, says *Rucher Belge*. Doesn't that mean that a skep is 20 per cent better than a frame hive, for wintering? [It is evident that the man who made the statement kept bees in straw skeps. How natural it is for our opinions to be biased by what we use!—ED.]

YOU DOUBT, Mr. Editor, page 870, if any one would take the job of gathering 100 lbs. of propolis at \$5 a pound. If my bees were all Punics I think I could easily gather that much. In 1897 I think I threw away 25 lbs. scraped from sections. I'd be glad to get 50 cts. a pound for it. [Would you take a con-

tract to furnish 100 lbs. during the coming summer, at 70 cts. per lb., and, failing to furnish that amount at the time specified, give a forfeit?—ED.]

AT THE OMAHA CONVENTION, of 21 who had tried both small starters and full sheets in sections, 17 preferred the full sheets. [I remember this; and I wondered at the time if this preference was not based wholly on the fact that bees did quicker work with full sheets, and perhaps made better-looking combs.—ED.]

REFERRING to an item on p. 886, haven't I seen the statement in some bee-journal that hives would go up 25 per cent? [Perhaps so; but I was not aware that any such statement had gone forth. All I know is that we do not expect to raise prices on our own goods. Of course, there will be, as every year, some fluctuations of minor importance.—ED.]

I WAS ONE of those who got caught by the cold weather. Nov. 2, 3, 4, and 5 my bees flew. Then the weather kept getting colder, but I thought surely another warm day would come. Nov. 22 it was 15° above zero; 23d, 6°; 24th, 3°. I couldn't stand the strain any longer, and took the bees in the 24th. Glad I did, for it's been cold ever since. But I wish they had been taken in Nov. 6.

DOOLITTLE says, in *Progressive*, that he has modified his views. If he were starting afresh he would prefer the ten-frame Langstroth to the nine-frame Gallup, providing he was where he could cellar them. But he has no use for anything bigger than a ten-frame L. [The best evidence of one's candor is the fact that he is willing to acknowledge a change of views occasionally. I always feel a little bit shy of accepting the opinions of one whom I never knew to change his mind.—ED.]

I SHALL BE GLAD to believe, Mr. Editor, that it is necessary to boil foul-broody honey only "several minutes;" but please remember that we have the following to face, which stands yet as a fact: Prof. Mackenzie secured growth from spores after they had been kept at 212°—not approaching, but at 212°; that is, they were brought to a boil, and kept boiling for two full hours. If there is no mistake about this, is it safe to advise less than something more than two hours? [The only ques-

tion in my mind is whether these scientists did not make a mistake; and ought their single scientific experiment to overbalance the results of practical experience for years?—ED.]

I MELTED a finished pound section of honey, collected the wax, and it made a marble a little more than an inch in diameter. [Very possibly the next section of honey that you may have melted would have a larger or smaller ball of wax. I know that several different sections from different localities that I tested years ago varied considerably. The lightest comb came from Colorado, and the heaviest from a locality where the honey season was slow and the bees had time to chink in wax.—ED.]

"AS TO THE LENGTH of time it takes for the spores to develop into *Bacillus alvei*, no one knows," says GLEANINGS, p. 883. Surely Dr. Howard and Prof. Mackenzie, who raised crops of bacilli from spores, ought to be able to tell something about it. And while you're about it, Mr. Editor, won't you please ask them how long foul-broody honey should be boiled to make it safe to feed healthy bees? [All right. Prof. Mackenzie and Dr. Howard will please take notice that we should be pleased to have one or the other of them, or both, tell us how long it takes spores to develop into *Bacillus alvei*.—ED.]

A WRITER in *British Bee Journal* hints that bees may be made immune to foul brood by some sort of anti-toxin treatment. Sort o' vaccinate 'em. [The vaccinating would have to be done before the bees were 'born.' I know that a few claim that *Bacillus alvei* is found in the stomachs of adult bees. It may be that this germ life affects them adversely; but I could never see but that the bees in some of our worst foul-broody colonies were just as healthy as any we had in the yard. Foul brood is a disease, as its name indicates, of the brood; then the anti-toxin would have to be administered—well, when?—ED.]

CHESHIRE says that, in a case he carefully examined, the bees used a pound of wax in constructing 35,000 cells; but an American writer found 50,000 cells constructed from the same amount of wax. That makes somewhere from 2.6 to 3.8 ounces wax used for a Langstroth frame, or from 21 oz. to nearly 2 lbs. for an eight-frame hive. [This only emphasizes the point I made in answer to another Straw in this issue, that the amount of wax for a certain capacity of honey varies considerably. I have no doubt that both Cheshire and the American writer are entirely correct in reporting 35,000 and 50,000 cells made from one pound of wax.—ED.]

THAT POINT made by N. E. Doane, p. 883, that bees are carried more safely if most of them are bagged, is worth noting. The bees in the bag haven't the same chance to overload with honey and then spew it over themselves. [Yes, since you speak of it, it strikes me that more emphasis should have been placed on this point. Bee-keepers, when moving bees, are inclined more and more to the use of a screen leaving three or four inches above the combs. If it is a very hot day the bees will

leave the combs, and cluster in the space above; and the danger of their overloading and spewing all over each other is very much less.—ED.]

AS POSTSCRIPT to your footnote, p. 880, W. Z. Hutchinson says he buys sections and shipping-cases, but makes his hives. He is "near planing-mills that have good machinery and competent workmen," with lumber cheap, so it costs him much less than to send to a bee-hive factory. But that's hardly making his own hives. I suppose the only difference between him and me is that he gives special instruction how his stuff shall be cut. He says wisely that each one must decide for himself which is best for him. [W. Z. Hutchinson does just the right thing; but there are few, comparatively, who are so favorably situated. By far the great majority are out of the vicinity of cheap lumber. Indeed, they could buy the hives all made up in the flat about as cheaply as they could buy the same superficial surface of plain lumber.—ED.]

C. P. DADANT says, in *American Bee Journal*, that bees "fare much better, and keep warmer, if they can keep the bulk of their cluster below the honey, on empty cells." Our Canadian friends report good success with combs sealed solid to the bottom. Now, who can give positive testimony as to the relative merits of the two plans tried side by side? [I can not give any testimony either way. We have wintered bees successfully on combs built solid to the bottom-bar, and on combs having a sort of clustering-nest below the honey. I remember particularly one winter, when, for some reason I do not now recall, we fed late, and then fed in such large feederfuls that the combs of some colonies were solid slabs of sealed stores. I did not intend to give any of them quite so large doses, and I was fearful that the following spring would show losses; but I could not see but those colonies with solid combs of sealed stores wintered as well as those that had time to prepare a brood-nest. Notwithstanding, I believe the ideal condition for good wintering is that pointed out by C. P. Dadant.—ED.]

"IN THE EATING of extracted honey such a large quantity of sweetness is brought in contact with the organs of taste all at once as to overtax them, so to speak. In eating comb honey there is a gradual breaking-down of the cells, the honey is released in small quantities, and the 'sweetness long drawn out' is not only poetical but really real." So says Editor Hutchinson. Bro. H., do you believe you can detect the slightest difference between comb and extracted when spread on bread or biscuit, *provided* the honey is of the same quality in each? And when a chunk of comb honey goes into my mouth, there's no cell by cell breaking down or "long drawn out" sweetness, but a grand crash of the whole structure "at one fell swoop." [I can not give up the idea that wax has a peculiar flavor of its own. Whenever I go down into our wax-room and place my nose close to some nice new foundation I am reminded of boxes of scented soap. Now, if the olfactory nerves can detect something in wax, why not the organs of taste?

Notwithstanding I prefer thick extracted for my own eating, I am willing to forego the additional flavor in the wax. I do think that comb honey is more apt to have a better flavor than the average extracted. There, that is my opinion.—ED ]



### LARGE HIVES; DISADVANTAGES.

A Very Fair Statement of their Good and Bad Points; why Mr. Dadant Prefers the Large Hives in Spite of their Unwieldiness.

BY C. P. DADANT.

I must own up that there is nothing perfect in this world, and that the large hive is no exception. In the first place, it costs a great deal of money, and that is a big point for a beginner who may not like bee culture after he has tried it a year or two. While an eight-frame Dovetailed or Simplicity hive costs about \$1.25, the large hive we use costs something like twice as much. Then they are not suitable for comb honey unless under special management, because, if left to themselves, as Doolittle says, the spaces that are not filled with brood, in case there is more room than the queen can fill with brood, are filled with honey by the bees, and the result is too much honey in the brood-combs and too little in the supers, especially in an inferior season.

Again, those large hives are very cumbersome. It is out of the question for one man to carry one of them from one place to another in the apiary, unaided, even if it does not contain any bees; for it is voluminous as well as heavy; and when the bees are to be put into the cellar for winter it is fully twice as much labor to take in a given number of large hives as the same number in small hives, or eight-frame Langstroth bodies.

But the worst thing is transportation. In a good large wagon we could easily place two rows of eight-frame hives and about seven in each row. If they are carried with supers and only a shallow cover you can put in two tiers of them, which makes about 28 hives in a load, while 12 of our large hives make a big load for a wagon. In shipping by rail the cost of transportation is outrageous anyhow; but one of these hives costs about twice as much as one of the small ones, being fully twice as heavy, and no one short of a Vanderbilt or a Rockefeller can afford to have such a hive sent by express, for the express companies' rates on such packages amount to a small fortune, and they have still added the war-stamp, which they demand of their customers, and this, by the way, in my opinion, is neither honest nor patriotic. What do you think of it?

The objection of the great cost of shipment of our hives is such that we took special pains to make lighter hives when we shipped bees

for breeding, and it is quite probable that our customers still thought our hives too expensive in this respect.

Now, Mr. Editor, I believe this is all. I assure you I can't think of any other objections to the large hives, and I made the case as black as I could. It is true I make a poor State's attorney in putting the case before the jury, for the people as against myself, and it would probably have been better to let Hutchinson do it. He surely would do it better.

But, hold on! I can not be content to let the case rest in this way; and as I believe I have a little room left in your paper to make my article of average length I will beg leave to add a few words in defense of my position, and explain why I stay with the large hives in spite of the enormous defects mentioned.

The hive is too large for transportation, but we do not transport it except in rare instances. We consider a hive a fixture, after the bees have been put into it, and we see no more need of transporting it about than a house. We have hives that have certainly been in the same spot, unmoved, for ten years, perhaps fifteen. If we wanted to carry on migratory bee-keeping, or move our bees to and from our out-apiaries, as Dr. Miller does, this point would have much more weight; but we have never practiced any such thing; and as to cellar wintering, which we have not practiced for some ten years, we consider it of small import whether it takes two men or one for half a day twice a year, if our profits are increased thereby. The hive could be made much lighter than we make it, by having a cap or cover fitting over it dovetailed, or simplicity fashion, instead of a telescoping cap; but we have tried both, and no one can run fast enough to catch up with us to make us a gift of such a hive for our use. We want the overlapping cover for several reasons. This being outside of the scope of my article I will return to the question. You understand my position—I want the hive to stay there like a hog-shed or a chicken-house, and its weight concerns only those who expect to move it about.

As to the cost, I do not believe, if we look at all sides, that it is much greater to the apiarist. With the small hives many more swarms will be harvested, and there is need of about as many empty hives as you have colonies of bees; while with the large hives ten per cent of the number will be sufficient. But, put it at twenty per cent, or, if you like it better, say that as many hives will be needed as with the small hives, and let us see what it will cost. A hive, if well made and well painted, will last thirty years. We have two dozen in our apiary here that were made in 1867, hence are 31 years old, and some look sound enough for another 30 years. It is true, they have been kept sheltered with a roof; but the roof costs only a trifle when it is made of cheap lumber. The additional cost of a large hive, if double that of a small one, will represent, in interest and sinking fund, between ten and twenty cents per year, or one to two pounds of honey. Is it likely that I can raise this much more, if we consider the better

facilities for wintering, the less danger of spring dwindling, and the greater scope given to the queen if she proves fertile? In a word, am I not better off at that difference of cost with a hive that can be made as small as any one can wish it or as large as may be needed to accommodate the best queen? I leave your reader to reply, and decide in his mind whether I am right.

I see that I have not yet considered Doolittle's objection, which is of some weight. I will consider it in my next, and will also give my ideas as to the future of the large hive.

Hamilton, Ill.

### SOUTHERN HONEY.

Honey from all Portions of the United States Compared; Honey from Cuba, and its Quality.

BY O. O. POPPLETON.

It looks as though many bee-keepers have very mixed and crude ideas about the quality of honeys raised in the South as well as in Cuba. See record of discussion at Omaha, on page 626, in the *Amer. Bee Journal*; also editorials in *GLEANINGS*, pages 771 and 805, and in the *Amer. Bee keeper*, page 195. Possibly I can add a mite toward straightening out the tangle of ideas.

The honey region of the North is a comparatively narrow section across the continent, and there are less than a dozen species of flowers that yield large enough quantities of surplus honey to be a factor in our general markets. The South furnishes a much larger variety of honey-yielding flora. There are at least two main reasons for this. One is, the greater diversity of soil; and the other is, that the nearer one gets to the tropics, or what many call the frost-line, the greater the variation in vegetation within short distances on a north and south line. The southern part of our country is so near this frost-line that radical changes in plant growth occur within short distances. One can journey on a railroad train, between sunrise and sunset of any day, and not a single flower that yields honey where he started from in the morning will be found where he is at night. There are three sections in Florida, in which the honey-flora of each differs widely from that of the others. A large part of the honey from Texas differs widely from that from any other section of the South. Honey from the hill region of Georgia, around Atlanta, differs from that obtained 200 miles either north, south, or east from that place. The conditions outlined above are true all over the South. I doubt whether there is or was any one, unless it might have been the late Mr. Muth, who was fully posted on all the different kinds of Southern honey.

Each kind of honey obtains its own distinctive flavor from the flower that yields it; and it follows as a matter of course, that, as the different varieties of flowers that yield surplus honey in the South are many, so the different kinds of honey, each with its own distinctive flavor, are also many. There is no single kind of honey that is general to the

South, as is white clover, basswood, or buckwheat general to the North. We have all kinds of flavor in our Southern honey, grading all the way from the mildest honey I know of to the strongest, from the whitest to the blackest, and from the extra light in weight to the heaviest.

A study of the conditions which I have only outlined shows that it is quite impossible to have a standard for Southern honey, each one of quite a number of sections having its own standard, which differs from the standard of all other sections. This is one reason why there are such diversities of opinion regarding the quality of Southern honey. Nearly all of us are prone to judge any general subject by the few conditions bearing on that subject coming under our own individual observation, without any investigation of the whole subject, and this is why so many of us have judged all Southern honey by the few samples we have seen.

It is a much simpler matter to get at the facts regarding Cuban honey, as the kinds of honey from there are so much fewer in number. At least two-thirds or more of all the honey we shall get from Cuba comes from a single species of flower, the so-called bell-flower. This honey is almost exactly like white-clover honey, both in color and body, but is a trifle milder in flavor. I am inclined to think that, as a marketable honey, it will be a little below white-clover honey, but above that from basswood. While I was in Cuba we sent Mr. Muth about 40,000 lbs., a good deal more than half of it being this kind of honey. He has told me that his customers took it readily in place of white clover — much better than they would have taken basswood honey. I have seen but little California honey; but if what I have seen are fair samples of honey from that State, then the bellflower honey from Cuba will equal if not excel it as a marketable honey. Those who are so favorably situated that they can find a home market for their honey in the country and small towns will hardly feel any rivalry from Cuban honey; but those of us not so situated, but who have to sell in the general markets, can not help finding such rivalry a serious matter.

The rest of the honey from Cuba is of an entirely different character, being dark and with very strong flavor — not as good a honey either in body or flavor as is buckwheat honey, but will probably be just as acceptable to the bakers, who seem to be the principal consumers of all kinds of dark strong honey. Should very many American bee-keepers set up business in Cuba I think Mr. Coggs shall, as well as a good many more of us, will find their rivalry a much more serious matter than we shall enjoy.

Stuart, Fla., Nov. 19.

[This article will cover a good many points about which there has been a thirst for more knowledge. I know of no one more competent than our friend Poppleton to give us the facts.

The bellflower honey he speaks of is of very fine flavor. If I were to offer any criticism it

would be that it is *too* mild. There are a good many in the North who are educated to prefer basswood honey because of its strong minty taste; and then there are others who dislike this taste, and prefer clover. But I should say that bellflower would compare in body, color, and flavor with the average white honeys on the market. The consumer would generally accept it as clover or basswood, although the expert bee-keeper would be able to recognize the difference.

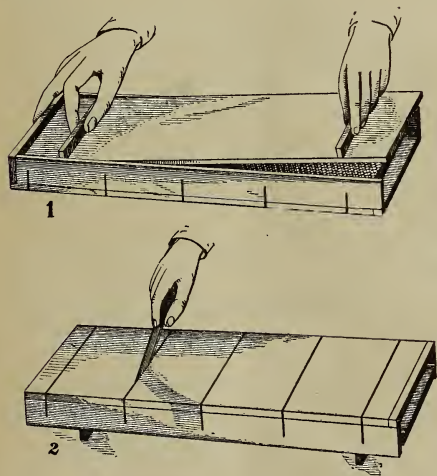
About Cuban competition, I suspect we'll have to "grin and bear it." If honey can be produced there for 2 cts. per lb., and almost the year round — well, it's too big a problem for me to fathom.—ED.]

### FOUNDATION FOR SECTIONS.

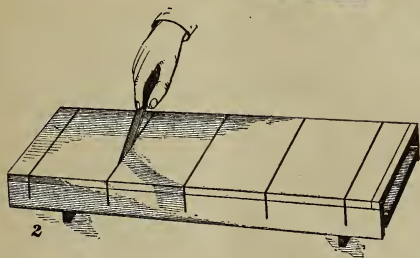
#### How to Cut Up in Full Sheets.

BY F. DANZENBAKER.

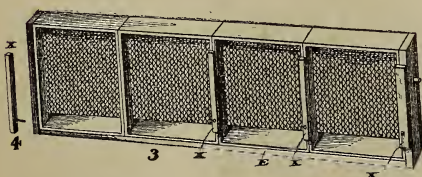
*Mr. Root:*—I send you a cut of the form I use in cutting foundation for the 4x5-inch sections. Fig. 1 shows its position with eight sheets or strips of foundation placed straight and even against the side of the form, with the cleated follower being closed in over the same.



1



2



3

Fig. 2 shows the form reversed, resting on the cleats of the follower. The weight of the form bearing on the sheets holds them securely in place while the sharp thin-bladed knife is drawn with very light quick strokes through the scores, cutting the sheets of even uniform

size, and true square for the 4x5-inch sections. When the form is taken off, the 32 pieces, just enough for a super, are left on the follower.

The two outside scores are for trimming off the bruised ends of the sheets, so that all are true and smooth alike.

Fig. 3 shows these full sheets of foundation fastened *only* at the top of the sections, with a free bee-space under the lower edge. The sheets are  $3\frac{1}{2}$  to  $\frac{5}{8}$  in. wide, or  $\frac{1}{8}$  to  $\frac{3}{16}$  less than the inside width of the sections, that they may swing freely until built out and fastened by the bees.

When one edge of the foundation touches the section, and is fastened by the bees so it does not expand with the free edge as it is built out, the latter will wind or curl out to the separators, and may be fastened to them, marring the sections. To avoid this a hot knife-blade should be passed along the full side of the sheet, or the section may be held on the side, and the foundation swung out on the hot plate of the Daisy fastener an instant, to melt off the edge so it will be as free as the opposite side. With this precaution no sections will be fastened to the separators. If the supers are level sidewise, the sections will be finished as straight and true as planed boards.

No bottom starters are used or needed in thin sections. In a super properly furnished they are a perfect nuisance.

Fig. 4 shows a bee-space strip  $\frac{1}{4}$  inch thick by 4 inches long, with a  $\frac{1}{2}$ -inch wire nail through the lower end. The free end at the top can be moved to suit till the super is wedged up, when it will stay in place. Two nails may be used if preferred. X X X shows how they are placed when in use, to afford a bee-space with plain sections used without separators. When sections average so wide as to overcrowd the super, by using a set of these in place of a fence the needed room is saved without trouble, as they may be used in each alternate row with fences, when full sheets of foundation are used in thin sections.

Washington, D. C.

[When Mr. Danzenbaker was here recently he showed me his method of cutting foundation up in squares. As soon as I saw it I was convinced it was the best device that had yet been gotten up, although somewhat similar to some of the other foundation-trimmers.—ED.]

### REQUEENING.

Superiority of Good Queens in Poor Seasons;  
Black Bees Preferred, and Why.

BY HARRY S. HOWE.

*Mr. Editor:*—One of the advantages of this poor season has been the chance to study more closely some of the problems of bee-keeping. One of the points that impress one strongly in extracting an apiary in such a season is the marked difference between colonies in the amount of honey stored. When honey is coming in fast there does not seem to be this

difference, or at least it is not so noticeable, while the poorer the season the more pronounced becomes the difference.

It seems as though some colonies said, "Well, we can't get enough for winter anyway, so we might as well stop now as any time," while others seem to work the harder under adverse conditions.

Last summer I had a chance to keep in touch with about 1000 colonies, and to notice which ones were doing the work. Of course, I did not see all of them every time they were worked, but I did see them often enough to make some comparisons.

One or two things were so evident that one seemed to run against them forcibly every time an apiary was extracted. One was, that the young queens were the ones that gave the results. On an average, the queens that were raised after the honey-flow was over last season were the best. There were some exceptions to this, due to other causes. For instance, the best honey-producing colony in my Danby apiary had a queen that was two years old; but she swarmed early, and the hive was set on the end of a row where it had an extra chance, which was further helped by a part of another swarm going in with them.

The queens raised in the spring do not have a good chance, for they are usually in nuclei which do not get in good order until along in the season.

Another thing that stood out prominently was this: For years I have bred my queens from the best honey-producing colonies, yet this year the colonies that gave the best crop had Southern queens or their daughters. That is, my strain of blacks bred for honey did not do as well as some other person's strain of Italians or Carniolans bred for points, I suppose. This seemed to be due to the difference in races. The Carniolans seemed, if any thing, rather ahead of the Italians. The pure bloods of either were ahead of the mixed races.

These are the opinions I formed in extracting, where only once in a while a colony would have enough to pay to take it off. It happened several times this summer that we would go to one of the further apiaries, and then not find them filled. In such a case we often went over the lot and extracted the best ones so that they would not be crowded before the next trip. Then after the usual time for the honey-flow to stop we had a few big days so that the last emptying was the best, some of the apiaries having the larger share of the combs all capped over. Here again was there the same striking difference between colonies.

One reason for my keeping black bees has been that I can work them faster. They shake off from the combs better, and smoke down quicker, than the Italians, whose superior gentleness has not seemed to make up for their slowness. When I am convinced, as I was this season, that they will get enough more honey to pay, of course I shall have to have "fancy stock."

To show that I am not alone in this change of opinion I will quote from W. L. Coggshall, who says he will buy \$50.00 worth of queens

in the spring, which, with what he now has, will put his apiaries in pretty good condition as regards breeds.

Another point I wish to mention is that there are some symptoms leading toward a change of opinion on the hive question in the Howe family, but it is too early yet to tell how it will end.

Ithaca, N. Y.

[I will explain that Harry Howe is Coggshall's "lightning operator." He (Harry) is Coggshall's head man, and is a Coggshall operator through and through all except the kick act. Mr. Howe is observing, energetic, and a hard worker; indeed, I doubt if there is a man in the country who can handle as many colonies in a given time as he.—ED.]

#### THINGS H. R. BOARDMAN DID NOT SEE IN MICHIGAN.

BY GEO. E. HILTON.

First, many of us are disappointed that H. R. confined himself so closely to the railroads, and failed to call on us. We think the object of his visit was largely lost because there are others besides Dr. Mason, Mr. Fowls, and the folks at "Rootville" who can talk, and they produce something besides "bug-juice," and have ideas too. The above is a gentle reminder that, if friend Boardman should come to Michigan again, he will be expected to pass over some of the railroads that don't confine themselves to swamps and "pine burnings," and call on some of the bee-keepers of Northern Michigan. He says he boarded the train Aug. 25. Yes, I remember the morning, as I was 52 years old that same day. "Billed for Petoskey, Frankfort, etc." Now, if he went to Frankfort he passed through Thompsonville, Benzie Co., and when there he was within five miles of nearly 500 colonies of bees, and within 1½ miles of the best-equipped yard in the State (see *Bee-keepers' Review* for September). Had he gotten off here he would have found tons of raspberry and willow-herb honey (yes, we have our bees strong enough to gather the raspberry honey, and with us it is a never-failing source).

I hope the people at Harbor Springs will not detect those two boys who said the town consisted of a store and two apple-trees. The fact is, they have a very lively little town over there; but there is a spirit of jealous rivalry over a county-seat matter that induces just such remarks. Had he been on the Harbor Springs side he could have heard similar remarks about Petoskey.

Yes, there are some bees around Manton. I am glad friend B. got a glimpse of our yard. Judging from the amount of goods I ship there, I should say there are several hundred colonies. In fact, I am thinking strongly of going up there, with a view of arranging to ship a car direct from factory.

Come again, Bro. Boardman, and get acquainted with us Wolverines, and we will show you something new.

Fremont, Mich, Nov. 19.

## Symposium on Fences and Plain Sections.

### Do They Produce Better-filled Boxes? Is there any Ridging of the Comb Honey? Various Constructions of Fences; Some Criticisms and Suggestions.

BY E. R. ROOT.

A year ago last August I made my first acquaintance with the fence, and what may be called a modification of the present plain section, at Mr. Morton's. I was immediately impressed with some of their salient features, and came home with the determination of bringing them before the bee keeping world. I said I became acquainted with the fence a year ago last August. I knew that Mr. Danzenbaker had something similar the year previous, and that B. Taylor and Oliver Foster preceded him; but, as Samantha Allen would say, I did not "sense" their value till the time above stated.

Along about this time it appears that W. Z. Hutchinson was studying on the same problem. He too had noticed how well plain sections were filled, and showed some of them in the *Review* about the time I began to talk about them in GLEANINGS.

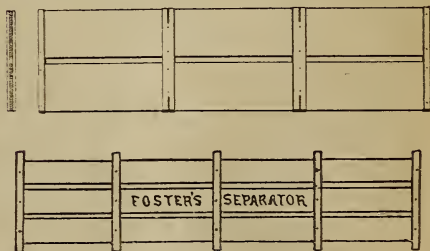
From that time to this a great deal has been said, both pro and con; but, in spite of all that has been written, there seems to be much that is not understood. There has been a strange mixture of fact and fancy, honest enthusiasm and prejudice; and through it all it has been difficult at times for the average reader to tell just where the truth lay. But during all this time I felt sure that the experience of Miles Morton, Francis Danzenbaker, L. A. Aspinwall, the late B. Taylor, Oliver Foster, and others who had tried this kind of section, might be, to a very great extent, relied on; and, nothing daunted, I banked my expectations—yes, my very statements—on the experience of these men. But still there were some doubting Thomases who threw out this or that objection, so much so that at times I myself began to wonder whether we had not made a mistake in pushing what I had felt all along was a great improvement, the other fellows to the contrary. But as months rolled by, and as reports began to come in from every quarter, my doubts as well as the doubts of some honest doubters were dispelled; and, to make assurance doubly certain, I traveled this summer and fall several thousand miles to see the honey in plain sections, and to talk with the men who produced it. Of course, I did not go all this distance simply and solely to learn about the new sections; but everywhere I went I took particular pains to inquire about them; and now I propose to place before our readers the results drawn from a large corres-

pondence and from much traveling and observation; and in doing so I shall endeavor to state the facts exactly as I have found them.

At the outset I will state that there have been a few adverse reports; but when I came to simmer them down I found that, in nearly every case, and I do not know but in all, the unfavorable result was owing to the faulty construction of super or fences. For example, the S fences we sent out last season were not properly constructed; but as they represented a very small percentage of the total number of other fences differently constructed, very little harm, comparatively, was done. The S fence was designed to fit the old-style supers, but in actual practice it did not do so; and, as a consequence, bee-spaces between the sections and the fences were irregular, resulting, in a few instances, in the combs bulging beyond the face of the sections; but in every case, so far as I can remember, where the regular supers and fences were used (the last named constituted perhaps nine-tenths of all the fences we sold last season) the results were generally favorable—so much so that we shall make little or no change in fences for 1899. But there were one or two minor defects, and these will be remedied. These changes are so slight, indeed, that the fences of 1898 and '99 can be used interchangeably in the same super.

As there may be some of our readers who are not acquainted with these new goods, I will explain that the new section is simply a band of wood, without insets or openings. Unlike the ordinary sections having bee-ways or insets, the top and bottom are of equal width with the sides. It is evident that the bee-way must be either in the separator or in the section. If not in the latter, then it must be in the separator. Cleats (to form the bee-ways) anywhere from  $\frac{1}{4}$  to  $\frac{3}{4}$  inch wide, and from  $\frac{1}{8}$  to  $\frac{3}{8}$  inch thick, are placed transversely across the separator, and at intervals equal to the width of the section. Tin might be used cleated on both sides, or strips of thin veneering wood in lieu of the tin.

The late B. Taylor, Oliver Foster, and Miles Morton conceived the idea of using slats beespaced apart as shown in the accompanying diagrams. It was this form of separator that



struck me as being an improvement on any other, for the reason that it afforded a continuous communication back and forth through the sections, and, as I thought, would secure better filling. The results of the past season seem to justify in part the assumption.

As this cleated separator looked very much

like a common fence or gate, for the sake of brevity we here at the Home of the Honey-bees called it a "fence," in distinction from separator, which latter is, ordinarily, a plain thin piece of veneering or tin that is let down between the several rows of bee-way sections.

THE FENCE OF 1898.

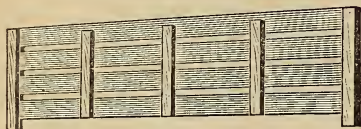


FIG. 1.

The fence that we adopted last season is shown herewith. It was made a good deal after the Morton fence, with these differences: The horizontal slats were narrower, as were also the cross-cleats, or what we may term the "fence-posts," to carry out the simile. It seemed to us that the slats on the Morton fence were wider than necessary. His were  $1\frac{1}{8}$ , and we therefore decided to make ours  $\frac{7}{8}$ , because we had quantities of scrap lumber of that thickness that could be utilized for fences, and thus reduce to a great extent the cost of material. Then it seemed to us also that the posts or cross-cleats were too wide. Our friend Mr. Danzenbaker had been trying cleats  $\frac{1}{4}$  inch wide, and he thought them just right. As here were two men of wide experience who seemed to disagree, we decided to strike a "golden mean," and therefore adopted  $\frac{1}{2}$  inch as the width; but, as I shall presently show, there was no golden mean in this case. We should have adopted one or the other extreme.

Let us consider for a moment why the cross-cleat or fence-post should be either wide or narrow, and why the mean of the extremes would not answer. We will suppose, for instance, that we have two supers of plain sections and fences. They are identical, save in one respect—width of cleats. One has cleats  $\frac{3}{4}$  inch wide, and the other  $\frac{1}{4}$  inch. We will suppose that we are looking down squarely on top of them. To assist the imagination a little our artist made a diagram which shows, not

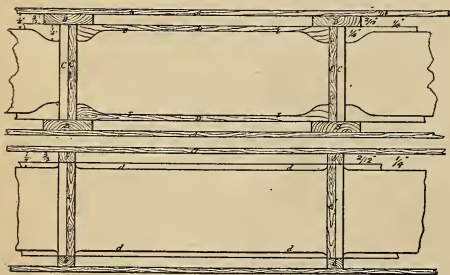


FIG. 2.

two supers side by side, but two rows of sections. One row has a fence on each side of it, with wide cleats (B) and the other also has a fence on each side with narrow cleats (b).

The wide white spaces indicate a cross-section

view of the comb looking down from the top. C C represent the ends or sides of the sections, and B b the cleats. Now, when the wide cleats are used, the bees will bend the face of the comb honey under the cleat, making the comb with rounded edges, as shown in the top view. When the cleat is narrow, the face of the honey will be slab-like, and run straight across from one side of the section to the other. Still again, if the width of the cleat be a medium or a golden mean between the very wide and narrow one, the bees occasionally build the comb up to the corner of the cleat, and then when the fence is removed from the super a bleeding edge is left. For this reason the cleat ought to be either as wide as  $\frac{3}{4}$  or as narrow as  $\frac{1}{8}$ , the latter being the width we have adopted.

To some, the comb shown as in the top with rounded edges, dipping down under the cleat, will present a prettier appearance. To others, a comb that is flat clear across it, clear to the sides of the sections, is handsomer. I have asked for the opinion of a good many, and the notion of nearly all seems to favor the last named.

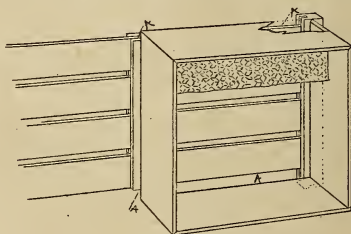


FIG. 3.

For that reason we use the narrow cleat this year, while last year we used a cleat that was neither wide nor narrow; but Mr. Niver and Mr. Morton both claimed that there would be less liability of honey bleeding with a wide cleat than with a narrow one, and this is probably true. But even with the narrow one there is only about one in a hundred that will bleed, and that not enough to make it unsalable.

#### DIFFERENCES BETWEEN OUR 1898 AND '99 FENCES.

Fig. 1 shows the fence we used last year, and Fig. 3 shows the one we have adopted this season. It is so near like the other that no one would notice the difference unless his attention were called to it. As already stated, cleats are  $\frac{5}{16}$  inch wide, instead of  $\frac{1}{2}$  inch. As to thickness, they run 13 to 2 inches instead of 12 to 2 inches, as last year; for you will remember that our cleats last year were  $\frac{1}{8}$  inch thick. There is no particular reason why we should reduce the thickness of cleats except that we thought we should err, if at all, on the

safe side. While the reduction is very slight, it is sufficient to give a little more wedging room in the super. The slats, instead of being  $\frac{3}{8}$  inch wide, are scant  $\frac{7}{8}$ —just enough to permit of the whole fence, when put together, being narrower than the height of the section by  $\frac{1}{2}$  inch; or, in other words, the top slat of the '99 fence will drop down  $\frac{1}{4}$  inch, as shown in A in Fig. 3, from the top edge of the section, instead of coming up flush as before, as in Figs. 4 and 1. There was no particular difficulty with the fence of last season; but a few reports seemed to indicate that there were times when the bees would fill the space between the fence-slats and section with propolis.



FIG. 4.

This narrowing-up of the fence in Fig. 3 leaves a continuous passageway across the top and bottom edges of the fence—not  $\frac{1}{2}$  but  $\frac{5}{8}$  wide, nearly. The same object was sought to be accomplished in Fig. 4 of last year by shortening the cleats so that the bees could pass back and forth as shown; but a few reports went to show that the bees would fill up this space over the cleats with bee-glue, perhaps indicating that they did not care to pass a space so cramped as  $\frac{3}{8}$  inch.

#### SPACE BETWEEN THE SLATS—HOW WIDE SHALL IT BE?

Last year we sent out a few of our fences with the spaces less than  $\frac{3}{8}$  (the width of the perforated zinc). When the bees could not go through, we learned early in the season that they were inclined to gnaw the space wider; and when *once started* to gnawing they would keep it up till the space would be widened to  $\frac{3}{4}$  or even  $\frac{1}{2}$  inch. This would, of course, result in ridging the face of the comb honey; but before we had sent out many with this narrow spacing we increased the space to  $\frac{1}{2}$  inch, and with this spacing we had no unfavorable reports. We shall, as last year, space the slats apart  $\frac{3}{8}$  inch; but, unlike last year, the minimum distance will be  $\frac{3}{8}$  instead of the maximum. If the distance is more than  $\frac{3}{8}$ , the honey is liable to be ridged. And this brings me to the question of

#### RIDGING OF COMB HONEY BEHIND FENCES.

This seems to be confined to individual colonies, even when the space between the slats is only about  $\frac{3}{8}$ . But at this distance it is very slight. To show you just how perceptible it is, I picked out two samples of sections from Mr. Morton's honey, for I observed that, if one section in the case was ridged, all the sections in that case would show somewhat of the same fault, thus indicating that some bees are more inclined to ridge than others. There is only, I should say, one colony out of a hundred that showed this tendency. Well, out of one of these supers I selected two sections,

brought them home, took them to our engravers, and had life-size engravings made from "life" itself. As they are in half-tone, they show exactly how much ridging there is (see Fig. 5). If you look sharp you can see where it is; but unless your attention were called to it particularly you would not notice it. I had the boxes made life-size so the slight defect could be made to show up as plainly as possible.

I will grant that I have seen comb honey ridged very perceptibly, and badly too; but this excessive ridging was caused in every case I investigated by the fact that the slats were spaced too far apart—say  $\frac{3}{4}$ ; or that the slats may have been spaced too close, so that the bees began gnawing them, and continued to gnaw them until they were  $\frac{3}{4}$  or more.

At this point I can not do better than to stop and make an extract from a long letter received from that careful and conservative bee-keeper, J. E. Crane. I produce his letter here, both because it indorses what I have said above, and because it gives at the same time some valuable suggestions.

#### CONSTRUCTION OF FENCES.

*Friend Root:*—I can only give you what I think now is right, reserving the right to change my opinion with more experience. I will say I think you are quite right in dropping the separator  $\frac{1}{4}$  inch below the top, or just enough so bees can pass over the top of the separator into the adjoining box and up into the clamp above. I wondered you did not do so last year. I believe, also, you are quite right in thinking that the cleats must be  $\frac{3}{4}$  or  $\frac{1}{4}$  inch wide. I feared that the width you adopted last winter would make trouble, and so in making mine I made them but  $\frac{3}{8}$  inch wide, and would have made them but  $\frac{1}{4}$  had not my clamps (or supers) varied a little in width; so that, if cleats were but  $\frac{1}{4}$ , some of them might not come in contact with the edge of the sections; and so, while the bees have built their combs on to them—i. e., some of them—a little, I do not remember one that "bled" when broken apart from the separator. I laid one or two apart for the purpose of having them photographed, but lost track of them. I presume that, if my cleats had been  $\frac{1}{2}$  inch wide, some might have bled.

As to which is the more desirable— $\frac{3}{4}$  or  $\frac{1}{4}$  inch—width for cleat, I do not feel so sure. It might, perhaps, to some extent, be a matter of taste. The  $\frac{1}{4}$ -inch width would give a comb almost perfect in form, while the  $\frac{3}{4}$ -inch cleat would give, to my eye, a comb not nearly so fine—in fact, a comb that would not grade "Fancy" by the rules of the N. A. B. Association; for you remember the combs, to grade "Fancy," must be of "even thickness," and such combs would be only about two-thirds as thick near the sides as in the center away from the wide cleat—thus:

[Mr. Crane here drew a diagram like that shown in Fig. 2.]

I have, as I wrote you, used the past season some 2000 plain sections with fence, and perhaps 1500 old-style sections with projecting edges, with fence also, the fence for these be-

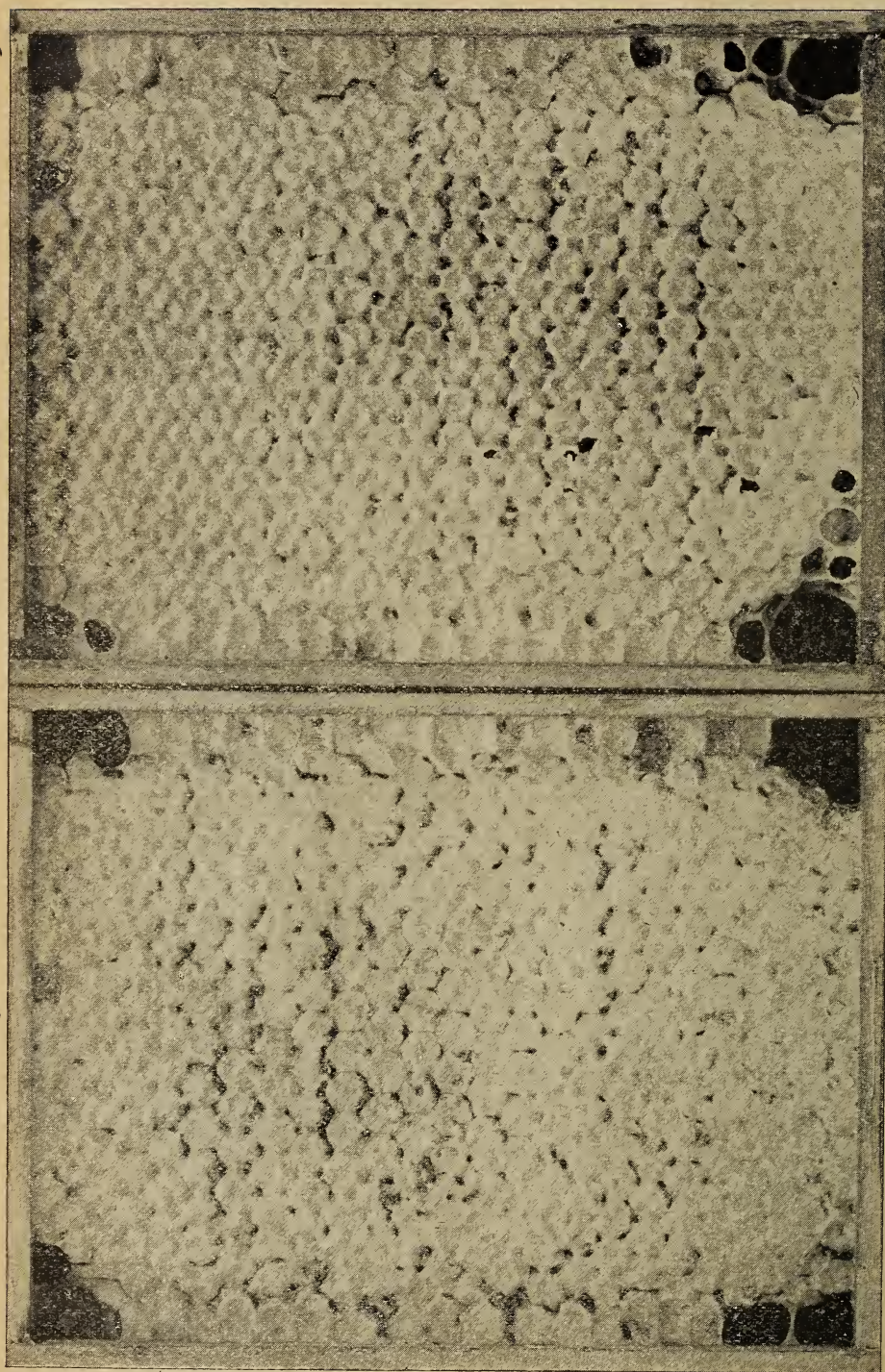


FIG. 5.—SOME OF MORTON'S FANCY HONEY, PRODUCED WITH FENCE WITH WIDE CLEATS (NATURAL SIZE).

ing made with tin cleats as the sample I send you.

The season has been good. For three weeks honey seemed as abundant as I have ever known it. The slats in my fences were, I believe, one-third or more,  $\frac{1}{8}$  inch apart—i. e., one-third of my fences were made with slats  $\frac{1}{8}$  inch apart so bees could pass through them as readily as if it had been  $\frac{3}{8}$ , and yet not one comb was ridged so as to be objectionable, and I should say that I did not notice more than one in 80 or 100 where the ridge was perceptible; nor did one, that I remember, drip from the combs being built to the cleats. I used, I think, about 400 fences without cleats, with great satisfaction, the slats having projections instead of cleats to keep the sections in place. These gave entire satisfaction. The bees evidently enjoy the passageways around the edges of the sections, as they seemed to use them freely.

I send you a sample of three styles of fence used the past season. The fence with tin cleats I used only with old-style sections, where it gives all the advantages of a fence without change in sections. I was not able to determine fully the relative value of each style of fence the past season, nor the value of fences as compared with old-style separators. One thing seemed quite sure, and that is, that the bees would finish off sections near the close of the season more rapidly where a fence was used than where the old-style separator was used.

I believe some one has reported his bees more apt to bulge their combs at the bottom than top. I know they will do it at either point when too much room is given.

Now another matter about which I do not feel so sure. I have often wished, when packing my honey for market, that every box in each case might weigh the same, or vary but an ounce or two. As it is mostly sold by the comb, and not by weight, when the combs vary four or five ounces, and are all sold at the same price, some get their honey very cheap while others pay dear for it, and perhaps they are the very ones least able to do so. Yet if I were to pack my honey in this way it would suit neither the wholesale nor retail dealer, as some cases of 20 sections would weigh but 17 or 18 lbs., while others would weigh 21 or 22 lbs., perhaps, which would not suit. I have given this subject a good deal of thought, with the same result—I could not make bees build combs just as I should like, and could not help having uneven weights. I have never been satisfied, and still have been compelled to put up with it. Yet this year, when putting up my plain sections filled between fences I found thoughts running through my mind like this: "If all my honey would only run as evenly as this lot, it would hardly pay to weigh it at all." Every comb seemed so much like every other comb, a solid brick of nectar, that, after a few cases were weighed, I could tell the weight about as well before it was placed on the scales as after. Was this the result of the use of the fence, or was it because my sections were not as thick as I have been using? Heretofore I

have used sections top and bottom  $1\frac{1}{8}$  with sides  $1\frac{1}{8}$  inches wide. These plain sections were but  $1\frac{1}{2}$  inches wide. I confess I do not feel sure. If the even weights of these combs in plain sections were the result of the use of the fence it is a strong point in favor of its use. If the result of a thinner comb, I should be tempted to make plain sections  $4\frac{1}{4} \times 5\frac{1}{4} \times 1\frac{1}{4}$  thick. Can you tell me if thin sections usually run more evenly, or are more evenly filled than thicker ones? Any information along this line will be gratefully received.

Middlebury, Vt., Oct. 31. J. E. CRANE.

#### DO FENCES RENDER SELLING SECTIONS BY THE PIECE FEASIBLE?

Shortly after the above was written, the following came to hand:

*Mr. Root:*—In my letter to you of Oct. 31 I believe my statements were quite correct; but at least one of my conclusions that I drew from them was, I fear, quite erroneous. I stated that I felt sure that bees finished their combs sooner near the close of the honey season when a fence was used than where a solid separator was used, and gave as one reason for this the thinner plain section rather than the open fence, and this might be used as an argument for thinner combs. Indeed, I did not, at the time I wrote, feel at all sure which was the more important factor in the ripening and sealing of the combs—the open fence or thinner combs.

My old-style sections are, top and bottom,  $1\frac{1}{8}$  inches wide, with sides  $1\frac{1}{8}$  wide, and the plain sections were  $1\frac{1}{2}$ , and look to be not much more than three-fourths as thick; and I thought the combs were at least a full  $\frac{1}{8}$  less; but, come to think the matter over more carefully, I find that actual space between the fences with plain sections is but  $\frac{1}{4}$  of an inch less than that occupied by the bees in the old-style sections, which is quite too small to suppose it would make any marked difference in the time of ripening and sealing a comb of honey. With old-style sections the bee-space is all inside the edge of the section, while with plain sections it is largely on the outside. More than this, my old-style sections were finished where a fence was used, as promptly as where a plain section was in use, so far as I remember.

Middlebury, Vt., Nov. 21. J. E. CRANE.

I take it, then, that it is not thickness of the comb, but the fence, that made the difference.

I do believe that it is more feasible to sell fence honey by the piece than honey produced with solid separator. Messrs. Morton and Niver have sold their honey for years in that way. The honey is graded according to quality and weight. Each shipping-case holds so many sections. I looked over quite a number of their cases, but I could not see that there was any practical difference between one box and another so far as the amount of honey was concerned. Mr. Niver said the scales showed little or no difference. Selling by the piece is very much handier; and if the fences will enable us to get our sections of an almost

uniform weight, selling by the piece will be feasible.

#### FENCES OF VARIOUS CONSTRUCTION.

When the subject of fences came up a year ago, inventive genius went to work immediately to devise fences of other construction. Some of them were good, some indifferent, and some of them decidedly bad. I will not attempt to show all the different styles, but only some of the best.

The first one is a fence made by J. E. Crane, and, I believe, patented by him. Instead of having cross-cleats, pegs  $\frac{1}{2}$  inch wide and  $\frac{1}{8}$  inch thick pierce each slat at just the right intervals to come opposite the uprights in the sections. We illustrated this fence some little time ago, but for convenience we reproduce it.

The object of these pegs is to afford not

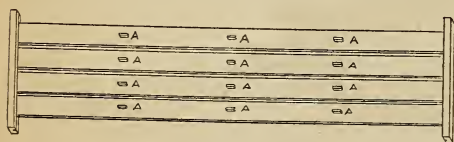


FIG. 6.

only communication from section to section *crosswise* of the super, but from section to section *lengthwise* of it. The pegs stick out just  $\frac{3}{8}$  inch beyond each slat, and it is probable that the bees would not fill the spaces between the pegs with propolis as they do the spaces over the top and under the bottom of the cleats of the fence shown in Fig. 4.

I think Mr. Crane wrote me that he was well pleased with the results secured by this fence. The only objection to it is that it is not as strong as those which are bound by transverse cleats shown in the other figures.

#### THE WOODEN-BUTTON FENCE.

Shortly after this, some inventive genius, simultaneously with ourselves, got up a fence like those shown in Fig. 7 below. The principle is much like that of Mr. Crane's; but the spacers, instead of piercing the slats, are held securely between them. The spacers them-

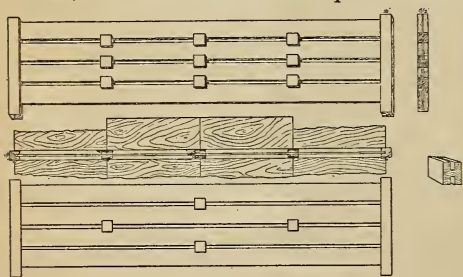


FIG. 7.

selves are little square blocks  $\frac{5}{16}$  inch thick, with a groove on each side about  $\frac{1}{8}$  inch deep, and  $\frac{1}{2}$  wide. These are slipped in between the slats while the fence is being put together, and are held in position by means of glue.

#### THE HYDE-SCHOLL SEPARATOR.

This is a form of fence or separator that embodies the principle of both the fence and the

old-style separator; and, except in the point of its construction, it would make an excellent separator. Well, here is what Mr. Hyde has to say about it:

#### THE HYDE-SCHOLL SLOTTED SEPARATORS AND SURPLUS ARRANGEMENTS.

[I will explain that Mr. Hyde sent us samples of his separator. They were made out of the ordinary thin sawed separator stuff that we use on old-style sections for '97 supers, with this difference, that the style shown in Fig. 8 was slotted out with transverse and longitudinal openings as illustrated. The style shown in Fig. 9 is the same thing, but cleated in the manner shown.]

Mr. Hyde asked for suggestions and criticisms, and I replied, stating that the most serious objection in my mind was the frailty of a separator of this kind, and that removing the same when stuck up with bee-glue, from a super filled with honey, would be liable to break a good many, as there was nothing but the strength of the grain to hold them together. Mr. Hyde's article, describing this separator and replying to my criticisms, is as follows:]

We have two separators on the free-communication principle—one for the old-style supers and one for the plain section. They are designated Nos. 1 and 2. I will describe No. 1 first.

We start with an ordinary plain separator, such as was furnished with the Dovetailed hive before 1898. This separator is then slotted out, making sixteen openings of four divisions, as shown on the left of the cut. Each of these slots is  $\frac{3}{8}$  x  $2\frac{1}{2}$ . Just between each division is an upright slot  $\frac{1}{2}$  x 3. These

FIG. 8.

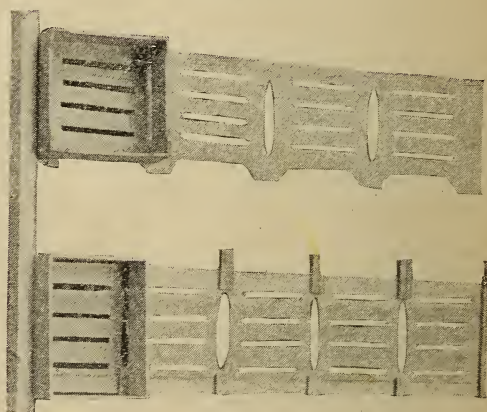


FIG. 9.

slots come opposite the upright edges of the sections.

Thus made they are used in connection with open-all-around (or open-four-sides) sections, affording free communication in every direction; viz., from row to row, from section to section in each row, and diagonally opposite, as can be readily seen from an examination of the separator and section shown on the left of

the cut. The consequence of all this is we shall get more honey and more money by reason of the free communication offered throughout the super.

In using this style of separator, all we have to buy is the separators, since sections would have to be bought anyway; or, if one prefers, he can first use the old ones and gradually introduce the open-all-arounds.

Such an arrangement is, in our estimation and that of others, greatly superior to the fence separator, because it is not only cheaper but offers freer communication than the fence, namely, from section to section in each row, and diagonally opposite.

I almost neglected to state, however, that the separator should be so made that it will come  $\frac{1}{4}$  inch below the tops of sections in order to give a bee-space over the edge of the separator.

Now for No. 9. It is made exactly like No. 8, but adapted to the plain section. The super and separator shown are for the Ideal size of super. This is done by gluing on the separators little pieces as shown in the cut on the right. The little pieces on the top edge of the separator are  $\frac{1}{2}$  inch thick, plus thickness of separator stuff, or  $\frac{1}{2}$  inch on each side of the separator. They are one inch long, and are saw-kerfed back  $\frac{3}{4}$  inch, slipping over the edge of the separator. This leaves a  $\frac{1}{4}$ -inch bee-space over the edge of the separator; in other words, the whole of the separator except the cleats is  $\frac{1}{4}$  inch lower than the top of the sections. The bottom pieces are  $1\frac{1}{2}$  inches long, and saw-kerfed and slipped on  $\frac{3}{4}$  inch. The reason they are  $\frac{3}{4}$  inch longer than the top ones is that the pattern slats are  $\frac{3}{8}$  inch thick, which will still leave us  $\frac{3}{8}$  inch space under the edge of the separator. The end cleats are the same as used in the fence separator (of course, this can be applied to the  $4\frac{1}{4}$  sections as well). With this arrangement you will get the benefit of the plain section and the Hyde-Scholl separator.

As to your objections: First, as to frailty, I grant they will not be quite as strong as the fence; but by making them of a little heavier material than common separator stuff, especially in the case of No. 9, where the two end cleats and little pieces are glued on, this objection is reduced to a minimum. Second, as to their splitting in pulling apart by reason of propolis, I will say they will not be as bad as the fence separators, because only the corners of the sections will come in contact with separators, and at the corners both separator and section are strongest, hence they will not be so bad to pull apart as the fence where the section comes in contact with the separator  $\frac{2}{3}$  of the way. Another reason for my preference for this separator is that there will be fewer corner holes than with either the fence or old separators; also, sections will be better filled out to the edges; for where there is a cleat on the fence, on the contrary, there is a passage-way with the Hyde-Scholl separators.

Hutto, Tex.

H. H. HYDE.

[The transverse slots in Fig. 8, as I have stated above, cut the very life and strength

out of the separator, even if it were made thicker as Mr. H. suggests. Fig. 9 is not so bad, because it is secured by cleats at the ends; but I should be afraid that neither would stand shipping, and that a large percentage would break when taken out of the super, owing to bee-glue. If they were of metal they would be strong enough; and even making them of thicker wood, as suggested in the article, will not help matters much.

As to cost, our own estimates show that the jobbing price would be higher than the jobbing price of the fence. The Hyde separator will have to be made of good solid sound stock, and of pieces not less than  $4\frac{1}{4}$  inches wide. The fences, on the other hand, are made of scrap material—such stuff as would ordinarily go into the furnace. Practically, the only cost of the fence is the labor of putting it together.

Aside from frailty and expense of the Hyde-Scholl separator, I have no doubt it will give results equal to any fence, and Fig. 9 might produce fuller and better-looking boxes of honey, for the principles are good.

Perhaps I should remark that Fig. 9 embodies the principle of a separator used by L. A. Aspinwall, of Michigan, and described in the *Review*, page 318, for December, 1897. If I am not mistaken, this principle has been made the subject of a patent.

I am sorry not to be able to speak more favorably of the Hyde separator; but I was asked by friend H. to criticise, and I have done so, hoping that our friends will avoid expensive experiment—not that they will get into any trouble with Mr. Aspinwall, for I am sure there will be no need of any litigation, but because, mechanically, the separators are weak, and from the cost point of view they are more expensive than fences.

What I have given thus far has been rather in favor of the plain section and fence. The following article, from F. L. Thompson, has been received; and as he takes up the other side I present it here.—ED.]

#### NEW AND OLD STYLE SECTIONS IN THE SAME SUPER.

	Average number of pop-holes in finished plain sections between fences.	Average number of pop-holes in finished scalloped sections.	Per cent of excess.
1st super	$3\frac{1}{2}$	(With plain separators.) $2\frac{3}{4}$	21
2d "	$2\frac{1}{2}$	" $2\frac{1}{2}$	31
3d "	2	" $2\frac{1}{2}$	26
4th "	$2\frac{1}{2}$	" $4\frac{1}{2}$	32
5th "	$2\frac{1}{2}$	(No separator's) $4\frac{1}{2}$	36
Total av.,	(about) $2\frac{1}{2}$	(about) $3\frac{1}{2}$	

The above table speaks for itself. Each super had three or four rows of one kind of sections; and the remainder, four or three rows of the other. Narrow starters, top and bottom, were used.

But, don't crow. The superiority of fences, so far as that table is concerned, is about all on paper. There was no apparent difference in the size of the pop-poles, and the difference in number was not visible to the eye. I thought from their appearance they were alike in that respect, until I found a mathe-

matical difference by counting and averaging. Grocers and consumers judge only by appearance. The table is concerned with a comparatively unimportant matter. In glancing at a comb, filling at the edges counts for much more than pop-holes, within ordinary limits. The plain sections showed no superiority to the eye except in one super (the third), and then but faintly apparent, in the matter of filling at the edges of the comb, over the scalloped sections in the *same supers*. (The filling by supers varied from poor to good.) This point surely constitutes about 90 per cent of what we term "good filling," when, as in this case, all the pop-holes were medium or small in size in both kinds; and not one of those who have of late been booming the new sections in GLEANINGS, so far as I have noticed, touches on this all-important point at all. Instead, they give us glittering generalities — "plain sections a success," etc. (meaning combs produced with the aid of fences). Why, what else did those wonderful photographs chiefly lead us to expect than combs well filled at the *edges*? The "success" of the fences should be spelled this way, see—f, a, i, l, u, r, e.

I found that the plain sections between fences were easily scraped, though not any easier than inset sections which had no separators at all; took less room in the case, didn't gouge each other, had straight combs, needed no separators in the case, looked neat, etc. But these are minor points. Because the combs were not built crosswise, I suppose, therefore they are a "success." I think "success" means that they should be a great deal better than the old style; and for large producers, who ship, that means first, last, and all the time, combs well filled at the *edges* under all conditions, in strong or weak colonies, poor or good averages, long or short flows; and, especially, well filled when old-style sections in the *same super* would be poorly filled. Now, who has tried both kinds in the same super? I haven't heard of any one yet. What kind of experimenting do you call that? It is really amusing to see all those so-called testimonials smirking at one another across the page. It reminds one of those well-bred social gatherings in which a vast amount of smiling is going on, without any visible cause of mirth—the kind that makes one's face tired. Do let's have a sufficient reason for all the blandness.

It was said that plain sections would save money in cases. Because one can get more of them in the same sized case? What's the matter with having a larger case, if one wants to save money that way? The small additional expense of larger cases is offset by the cost of fences. But that argument is weak, anyhow, because one's market may be accustomed to a certain number of sections in the case; and we certainly want the same number as now if we sell by the case, as will have to be done if light-weight sections are to be more profitable.

The new sections, not being better filled out without attention in other ways which can be as well given to old-style sections, will scarce-

ly bring a higher price. (They wouldn't anyhow in this market.) My second-crop inset sections between plain separators this year were as well filled out as the first-crop sections (which means very well indeed), though last year they were much inferior in that respect, and though the flow was light this year. In fact, last year my first-crop sections were an exact copy of the lower row in the photograph on page 128, and were quite heavy; and the second-crop sections were an exact copy of the upper row. This year, in the majority of colonies, both crops copied the lower row in the photograph, even though they were old-style sections with plain separators. It wasn't race of bees that made the difference. The same bees (Italians) gathered both crops. I suppose it was because I doubled up the brood this year in June, while ordinarily, in this locality, the colonies dwindle down to little better than nuclei during the second crop. If that supposition is correct, I infer that *strong colonies* have many times the influence of fences in securing well-filled sections. Let's get up a boom for strong colonies.

Again, I have never tried taking pains to get the foundation close to the wood all around; but Mr. Getaz has; and he says in the *Review* he can reproduce at will by that means such combs as appear in plain sections in the photograph. And Mr. Danzenbaker, as reported by Mr. Weed, lays *his* success in securing well-filled sections to the same plan. Doesn't that give the fence away? If it secured good filling, what would be the use of being so particular about the foundation? If the foundation does it, what is the use of the fence? Is not by far the greatest service which the fence renders, that which consists in bringing the comb surface up close to a straight-edge laid across the section? From one point of view we might call that "good filling," but, if so, then we need a specific term for that filling at the edges which makes square slabs instead of rounded chunks. With that kind of filling, which chiefly affects the appearance of the combs, the fence, in my experience, has next to nothing to do; but that virtue is just what was claimed for it by the photographs. The photographs didn't lie; but they didn't show ordinary sections from the same super.

I did not try any spaced  $1\frac{1}{2}$ -inch plain sections without separators, but did try a few  $1\frac{3}{8}$  sections that way, made by planing down ordinary ones. These also were tried in the same super with plain sections and fences. In this super both kinds were exceedingly well filled at the edges and corners, and no difference was observable between them in that respect, or in the size of pop-holes. The plain sections averaged  $3\frac{1}{2}$  holes, the others  $3\frac{3}{8}$ . But, as usual, both presented an equally good appearance to the eye, aside from the bulging.

I also tried three other supers of these reduced sections, spaced apart  $\frac{1}{4}$  inch, with the result of many brace-combs between the edges of the wood of opposite sections. The spacing should have been no more than just enough to let a bee through, and the sections should have been supplied with full sheets. As it

was, most of them bulged badly, requiring cleated separators in the case. But this lot of sections averaged nearly 17 ounces, being the heaviest of all. The total average section weight (two apiaries) was  $14\frac{2}{3}$  ounces. The average of the plain sections was not quite 13 ounces.

A neighbor, who used 7-to-the-foot sections without separators nearly altogether, producing 300 cases, averaged  $14\frac{5}{8}$  ounces to the section, with very few bulged. That scheme looks more promising to me than plain sections and fences. The 7-to-the-foot section is *really* a narrow section; and whatever influence that degree of narrowness has in securing straight combs, we may get from it (without lowering our present average weight) by discarding separators; and by discarding separators we get combs almost as close to the straight-edge, laid across, as those produced with fences. And if we do want sections as light as the plain ones, we can make inset sections still narrower, say  $1\frac{1}{2}$  inches, and be still more likely to get straight combs. I think the editor missed the point in quoting Mr. Hutchinson's editorial on narrow sections, for the  $1\frac{1}{2}$ -inch *plain* section with cleated fences is little more to be compared with really narrow sections than is the  $1\frac{1}{8}$ -inch section with plain separator. With the cleats, it is  $1\frac{3}{8}$  inches in width, making only  $\frac{1}{4}$  inch difference. It is the fence separator, only that makes straightness in its case. Well, if we can get straight combs by using narrow sections, which will be no lighter than plain sections have proved to be, and get them well filled by attending to the foundation and the strength of colony, and get more sections in a case, why, then narrow inset sections without separators are clearly superior in promise to plain sections and fences, because we don't know but we may get just about the same results, with the relief from the work, bother and expense of separators thrown in. I think I should even experiment with *open-sided* narrow sections, if necessary, before dropping the notion.

So far we have had no experimenting lately published that has been worthy of the name. Both kinds of sections compared should *always* be in the same super.

Spaced plain sections without fences may give good results in filling, but the adjustment is an unsolved problem. Mine varied too much, in spite of all I could do; and I fancy that, unless the distance from *center to center* is  $1\frac{1}{2}$  inches or less, they will bulge. That means pretty narrow sections.

Gluing of fences is a failure. I shall have to go all over my fences with nails. About one-third dropped off one to five cleats.

Montrose, Col.

F. L. THOMPSON.

[In the *American Bee Journal*, last April, page 225, there appeared an article from Mr. Thompson, condemning plain sections and fences, and it is but natural that the writer's prejudice (unconscious no doubt) should now be rather *against* than *for* them. He omits to give us one very important point; namely, the exact construction of the fences he used.

Mr. T. says there was no experimenting worth the name, and that both kinds of sections compared should be in the same super. That is exactly the way Mr. Crane conducted his experiments, he tells me, and yet the results are as he states in this issue.

As to Mr. Weed's statement that Danzenbaker was particular to have his foundation come clear out to the wood, that was a mistake for which I am partly responsible. Mr. Danzenbaker explained at the Omaha convention that he did not want foundation to come clear out to the wood, and that he was no advocate of such practice;  $\frac{1}{16}$  inch was as close as he cared to go. Thus falls one of Mr. Thompson's main props.

Mr. Thompson says, again, "It is really amusing to see all of those so-called testimonials smirking at one another across the page." This is almost as unkind as it is unwarranted.

As to glue being a failure, it was only such with Mr. Thompson, I take it. There is a great difference in glue, and even with good glue it takes experience to get good results.

#### PLAIN SECTIONS CONDEMNED IN THE CANADIAN BEE JOURNAL.

A short time ago the editor of the journal asked for the loan of certain engravings from our catalog. The favor was freely granted; but we were a little taken back when, in his issue for December, those same cuts were used as a boomerang on the goods they represented. We did not quite think the courtesy would be reciprocated in that way. However, it is all right. Intelligent, honest criticism, which I believe Mr. H. intended to give, we are glad to meet, no matter how or when it comes.

In a general way Mr. Holtermann sees no advantage in plain sections; in fact, came out against them a year ago. He thinks the fences will be more difficult to clean, "because," he says, "surely the fence separator with three spaces between the wood or bars, and five upright posts, can not be scraped more readily than a thin plain board. . . Bees are more apt to propolize in the angles and corners of the fence." This is all true enough; but Mr. Holtermann overlooks the fact that only the upright cleats, or that part that actually comes in contact with the sections, needs to be scraped. Actual experience (and I have seen cleated separators eight or nine years old) goes to show that cleaning more is time wasted.

He thinks it reasonable that the open separator would be an advantage; but in the tests he made, he says the advantages were not as apparent as he thought they would be. This may be all very true; but, as I have elsewhere pointed out, the experience of one bee-keeper one season proves nothing very much either way. It is the experience covering a series of years, and from different bee-keepers, that should really decide the matter. I have had only one season's test, and that was very favorable; but I have never mentioned it before. I rely, for my information, on the experience of others, covering years.

In another place Mr. Holtermann seems to gather the impression that I said that the bees

will enter supers of plain sections as readily as they will those of the extracting kind, and then proceeds to overthrow the statement. If Mr. H. will read the passage carefully he will see that he read more into it than the language warrants. Perhaps I implied that supers of plain sections and fences would be entered more readily than supers of the old style.

as that in the crate marked "plain sections." As to their not getting prizes, we recently received word from William Boxwell, of England, who wrote us (referring to the exhibition in Glasgow, in August) that "all the prizes for sections of honey were won by the no-bee-ways."

Referring to the matter as to the facility in

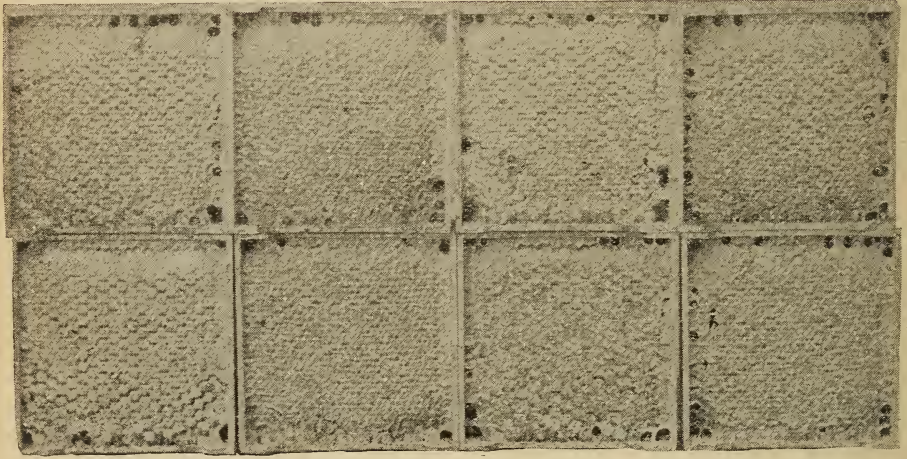


FIG. 10.—HONEY IN OLD-STYLE SECTIONS.

If so, there are not wanting reports to verify the statement.

He doesn't believe plain sections will bring a higher price, because none of the honey that was in such sections secured any prizes at the Toronto, London, and Ottawa exhibitions. In some markets they would not bring any more money; but in others they do. Mr. Byron Walker, a man who has had, perhaps, as extensive an experi-

scraping plain sections, with their plain straight edges, this he considers their weakest point. How he can so consider it I do not see, because there are no irregular surfaces for the knife to dip down into.

#### THE AMERICAN BEE-KEEPER ON PLAIN SECTIONS.

The editor of that journal, in his December issue, has a very fair article on plain sections.

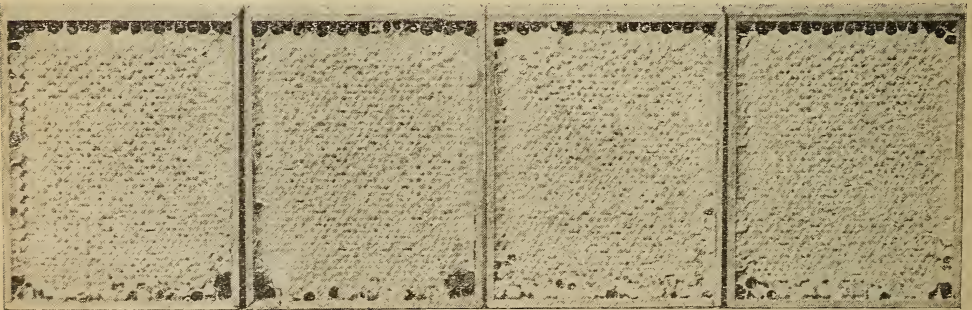


FIG. 11.—SOME OF DANZENBAKER'S 1898 FENCE HONEY.

ence in marketing honey as any other man in the United States, says honey in plain sections usually grades one notch higher than honey in the old style. The Columbus Commission and Storage Co., without knowing any thing about them or the discussion that has been going on about them, desired to secure several thousand pounds of the same sort

He is neither very strongly for nor much against them. His position is summed up in the following:

We have, as yet, had no opportunity of testing the advantages claimed by many for the plain section, though we have seen enough of the product upon the market to justify the conclusion that all plain sections are not as well filled as those which have come before the attention of the Review; and yet, no prettier

goods have been seen this year by us than have been shown in plain sections.

Just before closing this very long symposium I want to give some pictures of comb honey produced in old-style sections. The honey will compare very favorably with any I have ever seen in plain sections; but I had to hunt long and hard for it, and finally secured some very pretty specimens, and these are shown in Fig. 10.

In conclusion let me say that plain sections and fences must stand on their merits. If they won't hold their own, let them die. As manufacturers we can make as good a margin off the old style of goods as the new, but we believe the new are bound to live, like all good things that have their enemies.

#### AGE OF QUEEN-CELL LARVÆ.

Naturally Reared Queens vs. Artificially Reared Queens; How to Distinguish Swarming from Supersedure Cells; an Interesting Discussion.

BY R. C. AIKIN.

Beginning on page 724 Dr. Miller has an article on queen-rearing, discussing the point as to whether a colony, suddenly made queenless, and left to itself, would select such larvæ as would make the best queens. I am not going to pretend to answer the question in positive terms, for I am not sure of the answer myself. I think, however, I can help to an understanding of some of the points under discussion.

As most bee-journal readers are aware, I have for a number of years practiced unqueening to prevent swarming, and to keep the colony very strong for honey-gathering—especially section-honey work. Beginning with the season of 1890, I have unqueened more or less every year. I should judge that I have practiced unqueening on not less than 1000 colonies in the nine years. The colonies were suddenly deprived of their queens, without regard to whether they were preparing to swarm or not; for the bees were in out-yards, and a certain yard must be worked certain dates, and made safe from swarming for a certain period while I was at other yards.

I always calculated to remove any cells that might have been started, at the time the queen was removed. I always counted that there positively would be no swarming for ten days *after* the day of unqueening. I also counted that, by the end of the eighth day after, all worker brood would be sealed, so that, if I worked the yard the ninth day after unqueening, there was no open or unsealed brood in any hive.

With the great amount of work to be accomplished in putting on extras, etc., it frequently happened that the tenth and eleventh days came around before the work of cutting out cells was accomplished. I have even allowed them to run till the twelfth and thirteenth days. I had accepted the commonly taught theory that bees thus suddenly made queenless would use larvæ as much as three days old, or six days from the laying of the egg, making the selection, probably, within ten or

twelve hours after the queen was removed. Reasoning thus, the first queen should emerge the tenth day if she fully matured in sixteen days. Actual experience, however, began to teach me that a *very* small per cent would have a queen emerge the tenth day (I always count exclusive—that is, the ninth, tenth, etc., *after* the day of unqueening), and even a very small per cent the eleventh day. I was also surprised to find a considerable per cent would not have a queen out of the cell till the thirtieth or fourteenth days.

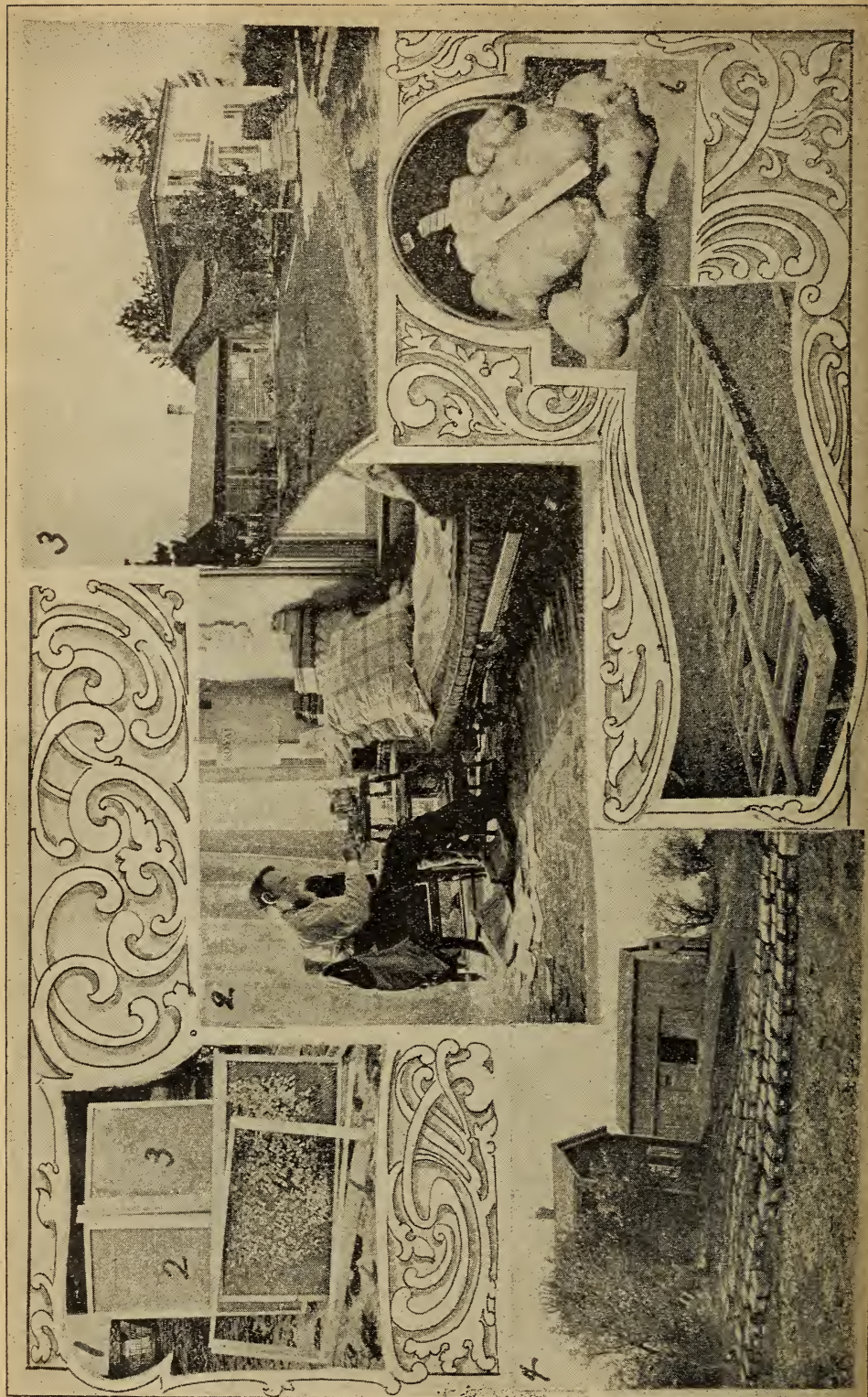
I believe, but do not know, that, when a colony has already started cells before the queen was removed, such a colony will mature a queen a little sooner than the one that had no notion of swarming. This would be reasonable from the facts that there might be queen-cups with eggs in, and overlooked in cutting out cells (I do not try to find all such), and that the cell-building spirit was on them, and no time would be lost in waiting to find that they were queenless.

My experience is that the greater part of the swarming resulting from my unqueening would occur from the twelfth to the fourteenth days, more coming on the fifteenth than on the eleventh. Colonies worked the eleventh day would show, a good many times, a few excited bees about the most mature cells, and the inmate beginning to exercise herself and gather strength. I have cut out cells from a great number—probably several hundred—the tenth to twelfth days, and *very* few were found emerging as early as the tenth day, and but a small per cent the eleventh day. I should say that probably half the colonies would have a queen emerge from the cell by the end of the twelfth day, and taper from that to the fifteenth day.

My opinion is that fifteen days for maturing a queen is a little bit short—I still count sixteen. I should say that, since the majority of colonies mature their first queens the twelfth and thirteenth days, they started with them not over four days from the laying of the egg. Then remembering that some few had probably started (or selected) the egg to be used, before unqueening, and still another per cent would not mature a queen before the fourteenth to fifteenth days, and it would seem that by far the larger per cent were reared from selections made inside of five days from the laying of the egg.

This is not proof, however, that such queens are the equal of those reared regularly under the swarming impulse or by supersedure. There is a great difference between cells built for swarming or for supersedure, as compared with those built when a queen *suddenly* disappears. If I remember correctly, Dr. Miller has said, in substance, that he would like to see the man or woman who could tell whether cells were built for supersedure or for swarming. I do not profess to be able to tell certainly, yet I generally feel pretty confident that I can, and I should not miss the truth very far should I assert that I can tell cells built when the queen is suddenly removed as compared with swarming or supersedure cells.

Many swarms issue on supersedure cells—a



SNAPSHOTS AT THE HOME OF DR. C. C. MILLER.—SEE EDITORIALS

fact overlooked by very many apiarists. Quite a considerable per cent of the swarming that comes out of the regular season—early and late—is of this class, as well as some that comes right in the height of the swarming season, and will be far more noticeable in apiaries where the replacing of aged or feeble queens is left to the bees themselves. Let none but the most vigorous queens reach three years—the majority be removed by the end of two full years, and superseding will be reduced to a minimum.

Now as to how to tell the various kinds of cells. Supersedure and swarming cells are very much alike—so much so that individual cells of either can not, as a rule, be distinguished one from the other. Collectively, however, they can usually be discerned. In either case they are built large and roomy—thick, corrugated, or rough walls, and almost invariably on the edge of a comb or in some place where the cell can hang perpendicularly and have plenty of room. If built for supersedure, usually only from one to three are constructed. Sometimes there will be four, five, or six, though not often so many. For swarming, the rule is not less than five or six, and up to twenty or thirty—usually from six to twelve.

If from any cause the queen is abruptly removed when no swarming or supersedure work has been begun, cells will be built in all sorts of places and shapes. You may expect to find them right on the face of a solid sheet of brood, often two to four in a cluster, and so joined to each other that they can not be separated without mutilation. The wall will be thin, the cell short, and many times no residue of feed is left when the queen matures. The number constructed will range from ten to fifty, usually twelve to twenty-five in strong colonies. Sometimes the cells will be quite large and thick-walled, and few in number, though in the great majority of cases more or less of them will be found on the face of a comb and at an angle, while swarming or supersedure cells are almost invariably on some edge, and plumb, or very nearly so.

These are my observations and conclusions after many years of handling cells under the various conditions and by the many thousands.

I think that many of the forced queens are as good as any, and that many are not. Almost any swarming or supersedure cell will bring a good queen, but many of the forced ones are of a very poor order. Many and many a time have I destroyed *every* cell built by unqueened colonies, not because the colony did not seem good enough, but because of the scrawny, stubby little cells. In such cases, if no swarming or supersedure cells are to be had I select from those colonies that have large and well-built cells. To unqueen and not use any judgment in the selection of cells would degenerate the stock by getting short-lived and weak queens, in my opinion. I feel confident that the average cell under forced circumstances is not equal to the average of either swarming or supersedure ones.

When a colony is building cells for swarming or superseding, they first make a queen-

cup, cell-stump, or base; glaze or varnish the bottom (in reality it is the roof, for they open downward, and have no bottom), and then deposit the egg in the cell. I do not know whether the queen or the workers put the egg there, but I do know that it is put there, and the cell developed as the egg hatches and larva grows. The whole process is of a regular and methodical order, the larva usually well fed and cared for.

Forced cell-building is much as when one has been burned out of house and home. When fire, flood, or wind has destroyed our home we put up a "temporary shack" for present accommodation. Suddenly deprive a colony of its queen when no cell-building was *anticipated*, and a very large per cent of the cells constructed will be of the temporary kind—thin-walled, small, built at almost any angle between the horizontal and perpendicular, larvæ more sparingly fed—a general irregular and conglomerate lot. Occasionally a colony will be more methodical and regular; but I suspect that this is mainly caused by such colonies being ready for or having anticipated the work, and had cell-cups already started, and may be eggs or small larvæ in the cups in a suitable place for development.

I do believe that, by using cell-cups, and proper conditions being present, very good queens can be reared under our manipulation, but not by haphazard methods.

Loveland, Col.

[Although you do not say so in just so many words, I gather from what you have written above that your experience is right in line with that of myself and perhaps of R. L. Taylor; namely, that queens reared otherwise than under the swarming impulse and that of supersedure are inferior. I think I have spent something like seven or eight of my summer vacations from school rearing queens; and if there is any one thing about which I feel pretty sure, it is that queens reared from cells built in a colony that is suddenly made queenless are not the equal of swarming or supersedure queens, in prolificness, size, or longevity. One can give the bees a sort of swarming fever by continuous feeding; and under this stimulus cells are built that are nearly if not quite the equal of those built under the *natural*-swarming impulse. But the plan we like best of all is what I may call the supersedure method, or what is really the Doolittle plan. Whenever we find a colony that is trying to supersede its queen, we mark it and reserve it for future use, for they are just the colonies that, under the stimulus of feeding, will build those beautiful long peanut-shaped queen-cells; and, my! such queens!

If the doctor will try the plan I am sure he will be converted to our way of thinking, if he is not already. He surely will be if he will try the methods side by side. When we first tried the Doolittle plan ourselves we decided there was nothing in it; but later on, when we went into it more thoroughly and carefully, we saw there was a good deal in it. I am thinking it will be quite a catch-line for a breeder to advertise, "Queens reared by the Doolittle plan."—ED.]

## RAMBLE 157.

## At Work in the Apiary; Experience with Harbison Hives.

BY RAMBLER.

On my arrival in Oro Fino a very agreeable episode occurred. I found temporary quarters with the nearest neighbor to our apiary. As I sat down before the ample fireplace in the evening, to enjoy its benign influence, a fleshy, square-built man sat in the corner, and, addressing me by my normal name, he said, "You are the fellow who used to keep bees back in York State. I have been by your old place a great many times. Do you remember me?"

ing my own experiences I am sure it will interest the reader to know something about the original owner and his methods of management.

Mr. Newton Levering came to this valley in the early days, and followed mining for several years. He became interested in bees through the number of bee-trees that were on the mountains, and his first start was from bees taken from trees. He early adopted the Harbison hive, and, as will be seen in the photo, the bees are nearly all in that style of hive.

Mr. L. practiced migratory bee-keeping. In the early spring, or about the time fruit-trees were in bloom, the bees were moved from the home yard and placed in various



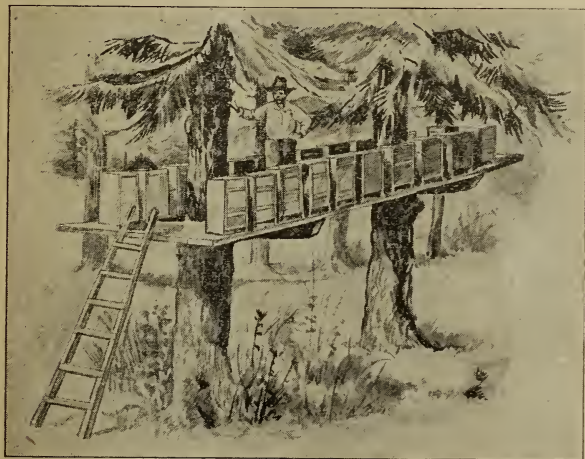
RAMBLER'S APIARY AT ORO FINO, CAL.

Not having had a speaking acquaintance with him in the old times, and not having the pleasure of the sight or thought of him for many years, I could not recall his name; but when he said "Temple," memory forged the missing link, and I remembered the man I had often seen. We had many pleasant reminiscences of our respective Eastern homes, and I reflected that here, where I supposed I had gotten to a place where it would be hard for a friend to find me, nearly the first one I met had known of me in the far East.

The apiary that had fallen into Mr. Levering's hands through the death of his brother, and into my hands through Mr. Levering when it changed brothers' hands, contained 265 colonies of bees. When I arrived on the scene of action a few had died through the winter, and there were 234. I herewith present a photo of the outfit with which I struggled for several months; and before recount-

places in the valley and in some of the canyons. In these out-apiaries the hives were placed upon platforms about eight feet in height. The platforms were built to trees, and were so constructed as to prevent bears from destroying the colonies. A bear is very persistent in his search for honey, and, owing to defective platforms, he lost at one time about \$800 dollars' worth of bees and honey. A bear with her cubs would approach a platform, and, while the cubs waited below, the old bear would get upon the platform and knock the hives off. They would all fall to and have a feast. Mr. L. at length made the platform tight around the trees, and boasted that he had gotten them bear-proof, squirrel-proof, and mouse-proof. It was no easy job to move and lift these awkward hives to and from these platforms. A platform would accommodate about 20 hives, and some of them were only two miles from the home apiary.

In the earlier days of his bee-keeping Mr. L. secured the honey in the old-fashioned 12 or 14 pound box, and sold it in the mines for 30 cents per pound. For several years he obtained more than 20 cents per pound for his



A BEAR PROOF APIARY IN CALIFORNIA

honey; but times changed, and it gradually lowered in price until he sold for 8 and 10 cents. Much of the honey was put up in round tin cans with a loose cover. Comb honey was fitted into these, and liquid honey poured in. The people around Oro Fino, without exception, give Mr. L. a very generous name, and he kept open house and an open hand to all in need.

As will be observed, the home apiary was comfortably located beneath the shade of apple and peach trees. The tall hives were placed close together. This was sometimes a vexatious feature in my management; for, should any of our various tools be dropped in front, a walk clear around the end of the row was necessary in order to recover it. These hives had been in use quite a number of years, and, like all Harbison hives I ever saw, the back portion was warped all out of shape, and much stuffing of rags and paper was necessary to keep robber bees from prying around the cracks. As to how these hives were moved to and from the platforms twice a year, without an enormous leakage of bees, is too much for me to imagine.

In the second photo I give a near view of three of the hives, front and rear view, open and closed, and with the regulation stuffing in the door joint that never comes together. The center hive exhibits the method of inserting the frames. In a new hive the

rear of the frames is covered with a glass back. After removal a few times the glass arrangement becomes broken, as shown, just below where it belongs; and finally it is replaced by a plain board. The tools necessary to work a Harbison hive are exhibited above the hive. The four tools at the right are levers used to loosen the frames. I generally used the light one with a straight handle; but there were emergencies when those with corkscrew handles had to be used.

The effect upon the frames will be noted by a glance at the brood-frame under the little window. The window is square, and the frame lacks two inches of being square. You can scarcely imagine how agreeable the handling of such frames becomes! The old style of boxes, made of unplanned lumber, is shown in the lower foreground. These were made without end or bottom; and the long knives shown were used to slip under the box and cut the comb loose. These boxes are still used by bee-keepers in Scott Valley. To deter-

mine when they are filled, rap on the top and the sound will give you the desired information. When the box is cut loose it is removed for a moment, and all loose honey scraped from the honey-board. This scraping



TOOLS FOR MANIPULATING HARBISON HIVES AND FRAMES.

is best done with an ordinary culinary chopping-knife. After due scraping, the box is returned for a few hours, when the bees clean

up all of the drip and the box is ready for removal.

The saw and the hatchet were very necessary tools in refitting frames and nailing the rear door in place.

The late Mr. Levering was, however, outgrowing the old style of management; and, although 75 years of age at his death, he had introduced about 30 Langstroth hives, and was using one and two pound sections.

The present Mr. Levering decided to work the apiary in a great measure for extracted honey, and the hives were lengthened out at the top by adding a rim of the proper depth. Our extractor was a small three-frame affair, the first of the kind I ever saw, and I fervently hope it is the last. A three-frame extractor is never in balance except when empty; and in order to use the machine with any degree of comfort it had to be braced from the top in three directions. Those out-of-shape frames were a close fit in the extractor-baskets when new; but now when loaded with propolis they had to be scraped more or less; and you can scarcely imagine how agreeable it is, when one is in a hurry to do a good day's work at extracting, to have to stop and shave off the side-bar of a frame; then the frame has a cross-bar in the middle, and a nail sticks out just where your knife must go; result, a dull knife and a nail that must be driven in. All of these manipulations take time, and tons of patience. I have about 100 pounds of patience, and it would be exhausted in about an hour, and I shall not reveal to the reader my nervous and mental condition in the late hours of the day.

There were two articles that were abundantly satisfactory, and the first was my uncapping-box. It was 5 feet in length by about 18 inches wide, 6 inches deep, with a wire-cloth bottom. Set at an incline it would hold the cappings for two days and drain them nicely. I like an uncapping box of this shape. It does not require frequent removing of the cappings. The cappings of to-day can be spread out in the evening and drain all night; then the next morning these cappings can be crowded to one end of the box for further draining through the day, and removed at night to the sun extractor.

The next article that was a real pleasure to work with was our tank. The present Mr. Levering had this made to order at Fort Jones. It is made of galvanized iron, 5 feet in diameter and 2 feet deep, and, according to my ideas of such things, it is the very best size and shape for a honey-tank. It will hold about 1½ tons. It is more easily cleaned than a deep tank. I improvised a wooden wire-cloth cover, and, though the honey was all strained through cheese-cloth, the cover was removed and the tank carefully skimmed before drawing off. As a result our honey was strictly clean.

A great many times I have noted in some grades of honey small black specks. These fine specks seem to elude several strainings, and I trace them to the lower end of the revolving spindle in the extractor. If this is not properly cleaned, and often, the grinding

process produces a black substance that certainly specks the honey.

In planning to work this apiary for extracted honey there were several little details that had to be considered. In the first place, extracting-combs were of prime consideration. There were about 25 colonies that had died in wintering. The combs in these were promptly taken care of and fitted to the upper extracting-chamber. Then there were a great many of those old boxes that had empty comb in them. These pieces were all saved, and fitted into frames. When all available combs had been used I lacked about 400 combs of having a full complement.

We had no foundation; and Mr. Levering, who always had the welfare of the heirs of the estate in mind, had sold several hundred pounds of wax, and it would be highly detrimental to said heirs to purchase foundation. I disliked the idea of having the bees build those combs all new in the upper story (and using the green things for extracting); and in order to get good old extracting-combs, and give the bees the very best place for filling empty frames, I pulled up two empty combs from the brood-chamber and fitted them into the extracting chamber. "And now," said I to the bees, as I put the empty frames below, "you can have all summer to fill those combs and keep them for your labor, while I will make good use of these old combs above."

Mr. Levering had quite a desire to increase the 234 colonies to 300. He thought it would please the heirs of the estate to know that there were 300 colonies in their possession; but as I was to receive half of the proceeds from the honey and wax, I could not become interested in said heirs except to get as large a crop of honey as possible and then divide the net profits, and along that line I worked. It was, however, a poor season for swarms. We had not one, and our neighboring bee-keepers who were producing comb honey had but very few.

Before closing this Ramble I wish to call attention to our lawn-mower in the shape of Doc. Wright's white horse. This horse pastured all summer in the bee-yard. He walked to that position of his own volition while I was preparing to take the photo. The bees seldom disturbed the horse on the outskirts of the apiary, and the night-time was reserved for his operations between the rows of hives. I would occasionally find a hive tipped over in the morning; but as it would be a Harbison hive there was no harm done.

#### VISIT AMONG BEE-KEEPERS.

##### Comb Honey Without Separators.

BY H. R. BOARDMAN.

At Owosso I had abundant opportunities for looking through the markets, and I found here, as everywhere else, much inferior honey offered for sale that had been brought in by the farmers and slipshod bee-keepers.

The next morning I started out just for adventure, going out west of Owosso ten miles

to Ovid, on the train. Here I at once struck a promising trail. I found in one of the stores some nice honey put up by a progressive bee-keeper. "A workman is known by his chips." I was not long in locating him, and a pleasant wheelride of five or six miles brought me to the apiary of Mr. H. C. Binger, a bright young bee-keeper with whom I spent a few hours very pleasantly. Mr. B. has about 25 colonies in fine condition. He reports a moderate crop of comb honey of 1200 pounds, of excellent quality—greatest yield from one colony, 155 pounds in 160 sections. He uses no separators, clips his queens, carries on general farming in connection with bee-keeping. He takes just pride in reporting a yield of 49 bushels of wheat to the acre (average) on  $7\frac{1}{2}$  acres, undoubtedly the result of the same painstaking care that gives him success with the bees. He has a new honey-house and workshop, which, like his apiary, is a model of neatness and good order.

Of course, I scolded Mr. B., as I had other bee-keepers I had met, for being behind the times in not using separators. But I began to think it would not be beneath my dignity to listen respectfully to the arguments of these non-separator bee-keepers, and about the same talk was gone over as at Dr. Smith's. I afterward purchased this lot of honey and shipped it to Ohio, and I have not been ashamed of it.

"If you had your bees down near that swamp we came past back here a little way, they would be doing good work," I said.

"But it is only half a mile from here to the edge of that same swamp," said Mr. B.

"Then I am sure they must be doing nicely, and they do certainly appear to be."

He shook his head, and replied, "I think not."

"But I saw a great amount of goldenrod and a great variety of other bloom, and I thought at the time there was a bonanza for somebody's bees."

"They may seem to be working well," he replied, "but I have never seen much honey from goldenrod or any other fall bloom—not enough to give any surplus."

"Well, Mr. Binger, that has been about my own experience, I will admit. But I should like to look into some of your hives, if you do not object."

"Certainly not;" and in due time, with smoker in hand, he had a hive open for my inspection.

I was, after all, a little disappointed, for I had expected to see some few signs of honey-gathering—enough to whiten the combs a little, but there were not. Several others were opened, all showing about the same condition. Mr. B.'s crop was mostly from alsike clover, with a little basswood and white clover.

As the time came for me to mount my wheel again we walked down to the front gate together, and my newly found friend offered many little persuasions to stay over night, as he said there were a great many questions that he wanted to ask that he could not think of then, and he wanted to talk more about bees. I reached my hotel at Owosso just at

evening, highly pleased with the day's adventures.

The next day was Saturday. It was a red-letter day in Owosso. Pawnee Bill's show was the great occasion. It had been talked of and anticipated for some days. It was very quiet in the morning; but as the day advanced, noise and confusion increased; and before noon pandemonium seemed to be let loose everywhere. The boys came in from the surrounding country. Many of them "got full," and talked loud and silly, and quite a number had to have the help of some good friend to keep on their feet, cutting a most undignified and disgraceful figure in public. It seems to me that these occasions are unprofitable to the community, and that their tendency is not to advance refinement, morals, or civilization.

I again boarded the train after dinner, to resume my journey southward. Lansing was the next place on my program, the former home of Prof. Cook. On arriving there I wheeled up into town to spend a few hours until the next train that would take me to Eaton Rapids. I rode around and through the grounds of the beautiful capitol of Michigan, down along the principal street, wondering what adventure awaited me next. I found about the same class of honey on sale here as at other places I had visited in Michigan.

While talking with a grocer, and making some inquiries about the local bee-keepers, he said, "There is a Mr. Larrabee, something of a bee-man, across the street."

"John H. Larrabee?"

"Yes, I believe so. You will find him just where you see that bicycle-sign."

I was not long in introducing myself to the very man I had wished to meet, and whom I had known for years.

"Well, how about the bees?" I asked.

"Oh! I don't know much about bees lately. I have about gone out of the business."

"Mr. Larrabee, do you find the bicycle business more profitable than bees?"

"I find it more reliable," he replied, "than keeping bees. Sometimes bees pay, and sometimes they don't."

"Do you know Wood, the man who went to California to raise queens on the isolated island of Catalina?"

"Well, now, I will take my wheel and go with you to the depot, and on our way I will give you an introduction to A. D. D. Wood."

We found Mr. Wood very busy, not raising queens nor handling hot bees, but at work in a smith-shop before a hot fire, where he could not stop, even to talk bees. I had only the pleasure of taking Mr. Wood by the hand, and, with an apology for intruding upon his time, wheeled on to the depot in time to get the train.

Eaton Rapids is a very pretty wide-awake town. I have seen no such signs of hustling anywhere else, even in the larger towns and cities, as I saw here. The sidewalks, although wide and roomy, were inconveniently crowded with people from the country during the evening, although there was no extra occasion for it, except that it was Saturday night.

Mineral springs have played an important

part in the past in booming the town, and are yet patronized to some extent. I did not see a single sample of choice honey in the town. It was dark with honey-dew, and very inferior. Hearing of some bee-keepers a few miles out I again mounted my wheel, and, in company with Ida, my niece, who kindly consented to act as pace-maker, wheeled out and made the acquaintance of Mr. Seely and his wife, both fine intelligent people. In the yard was an apiary of about 60 colonies in a rather neglected condition. The bee-master was cutting up corn. Both the ladies, Mrs. Seely and Ida, volunteered to go down to the field and help me interview Mr. Seely.

"I have come on purpose to talk with you a few minutes about your bees," I said, after being formally introduced by the ladies. "I am trying to learn something about the business."

"You have come to the wrong place to learn any thing about bees," he replied.

"Have your bees been doing pretty well this season?" I asked.

"I don't know."

"How much honey have you taken off?"

"None."

"But haven't the bees gathered any surplus at all?"

"I don't know," he answered again.

"Well," I said to myself, "he beats Dr. Miller." But I said, in one last effort to get a little encouragement, "You have some surplus on your hives now, I suppose?"

"I don't know—haven't looked at them at all. I put on the sections; and when they get done *making honey* I am going to take them off. Bees don't seem to do much with me, any way."

"Do you take any bee-journal?"

"No, I don't take any bee-papers. The fact is, I don't find time to look after the bees."

His wife said she had tried hard to have him either take better care of their bees or sell them and go out of the business entirely. I wanted very much to give him the same good advice that his sensible wife had, but I thought I'd better not on so short an acquaintance. These slipshod methods furnish an explanation for the inferior honey everywhere on the market.

A mile further on we stopped at another bee-yard. The "bee-man" was not at home. His little daughter said they had taken off some honey.

"Does your pa take any bee-journals?" I asked her.

"Oh, yes!" and she brought me several copies of *GLEANINGS*; and as I opened one and looked upon its familiar pages I could not but feel it was a sort of guarantee of better methods in the subscriber.

This concludes my adventures and experiences with the bee-keepers of Michigan. I have been treated with the utmost kindness and consideration everywhere. I have been really surprised to receive so much consideration among strangers, at the hotels, the railroad depots, and everywhere.

Something of a drouth has prevailed during the season over a considerable portion of

Michigan, and the outlook for a crop of honey next season from the clovers is not promising. It would not be surprising if Ohio furnished the honey next season instead of Michigan, as the outlook was never better in Ohio.

As I sped along through the great cornfields in Northwestern Ohio on my way home, and saw the fresh green fields, well-filled barns, and stacks of grain, and gardens of vegetables in great variety and abundance, all indicating bounty and abundance, a feeling of pleasure came over me, and I said to myself, "I am *proud* of Ohio after all," and felt in my enthusiasm like taking off my hat and giving three cheers for the Buckeye State.

East Townsend, Ohio.

### SWEET AND CRIMSON CLOVER, AGAIN.

A More Encouraging Report.—See Page 837.

BY THADDEUS SMITH.

There seems to be some disagreement in regard to the quality of sweet-clover honey. As I have had an opportunity of fairly testing it this summer I will give my experience.

The sweet clover that I have sown, and that which grows wild near me, afforded my bees good pasturage during a very dry spell in July and August, when there was absolutely nothing else for them to work upon, and enabled them to keep up their breeding, and store some in extracting-combs. They were to be seen thick upon the fragrant bloom from early morn till night for several weeks. One of my guests wished to see some sweet-clover honey, and so did I. We found some stored in extracting-combs just beginning to be capped. It was thick, and of a dark color and strong taste that was not very agreeable. Not satisfied with this I opened a hive with a new swarm in it, and found nearly all the frames filled with comb and brood, with some unfinished beautiful white comb in the outside frames, containing a dark honey of the same unpleasant taste. We concluded that the quality was so poor it was not worth taking, and felt disappointed in not getting some nice new honey.

In September and October we had a fine flow of honey from heartsease, and probably some from goldenrod. Extracting-combs and comb-honey supers were rapidly filled with honey equal in quality to basswood or white-clover honey. The sweet-clover honey contained in some of the combs in small patches appears to have been all capped over before the fall flow came on, as the cells containing the fall honey projected some quarter of an inch beyond those containing the sweet-clover honey, and it was easy to compare the two by scooping out some with a spoon or knife. Some one has said that sweet-clover honey would improve by age. I found that this had improved *some*, but there was room for still more improvement. But it was not so easy to extract two kinds of honey from the same comb without getting it mixed, and the sweet clover honey has left its mark in color and taste.

There was no new comb made in supers while the bees were working on sweet clover, and my comb honey is not tainted; and this honey from heartsease is as fine as I ever tasted. The bees quit the sweet clover when the heartsease comes in bloom; but the sweet clover was a good thing to tide them over the drouth. Without it I should have had to feed in midsummer.

My failure with crimson clover was not on account of being so far north. The trouble was to get a "catch," or a stand after the catch, on account of dry weather killing the young plants. It never gets as cold here as it does at Medina, or even at Cincinnati. I found the same trouble as far south as Central Kentucky, where I have a farm in the famous Blue Grass region. I have tried to get my tenant there to sow crimson clover instead of rye, for plowing under, but without success—too hard to get a stand. I now have a very fine catch here, sown in standing corn in August. The rains came at just the right time, and kept coming to keep it growing—first good stand in four years. Don't you think I am persevering? I think it catches better when sown with the chaff on. It holds the moisture. I don't think it will winter-kill, but may freeze out in spring, and be killed on account of wet land.

I am pleased with my experiments with sweet clover. Cut when young, and fed to cows, in stall, they ate it greedily. It will bear cutting two or three times or more. I plowed some under in my young peach-orchard, and planted late sweet clover. Turning under such a large amount of tops and roots can't help being beneficial. I am satisfied there will be no trouble to prevent its spreading where I don't wish it—not more than other clovers or weeds.

Pelée Island, Ont., Can.

[Why, friend S., you have given us a *tremendous* recommend for sweet clover. I have many times wondered why it would not give several cuttings like alfalfa if cut at just the right stage of growth; and now you tell us it may be cut two or three times or more; and when you say you are satisfied there would not be any more spreading from it than with other clovers, you have said about all that I have claimed. In regard to the quality of the honey, I should certainly say you have made a mistake unless you assure me that this dark unpleasant honey had the taste and smell of the sweet-clover plant. One need never be mistaken about sweet-clover honey, as both taste and smell declare what it is. Once upon a time we got two kinds of clover seed mixed—that is, the labels became exchanged, so that we did not know which was which. By smelling first of one and then of the other I decided, as plainly as any label could decide, which was sweet clover. Now, I have never seen any sweet-clover honey that was dark-colored or unpleasant to taste. I can imagine that the raw honey, before it had been uncapped, might have a rank taste. I am told that, in the vicinity of large cities, it has a dark color on account of the coal smoke that

settles on it; but, if I am correct, this does not spoil the beautiful pure sweet that well-ripened sweet-clover honey always has, so far as I know.—A. I. R.]

## FOUL BROOD.

### Questions Relating to.

*Dr. C. C. Miller:*—Having read your replies to sundry questions in GLEANINGS, I concluded to add to your troubles in that direction. The question of foul brood and how to cure it is uppermost in the minds of a great number of bee-keepers at present; and although there are several books written on the subject they do not seem to cover the ground sufficiently, especially by leaving the mind in doubt by saying too frequently *if or almost always*.

Well, to come to the point I submit the following questions; and if you do not feel inclined to answer them yourself, will you kindly submit them to some other wise man who has had experience with said disease?

*Qu. 1.*—Suppose you have foul brood in your apiary, and that the bees were at the starvation-point—*i. e.*, having no honey in the hive, and have to be fed; would it be necessary to destroy *all* the combs, including those that never had brood in them? or will it do to take only all the brood away from all combs that ever had brood in them, destroy them, and feed the bees sugar syrup?

*Qu. 2.*—In following out the McEvoy plan, after giving the bees strips of foundation in order to set them to building comb, must all the frames be destroyed, including those that the bees have not worked on at all, keeping in mind that the bees have no honey previously, in which the disease could spread?

*Qu. 3.*—After melting out the combs in the wax-extractor (*a la* McEvoy), can the frames be used over again? If not, why use the hive (and not the frames) without further disinfection than the sunlight?

*Qu. 4.*—Is the disease in the honey the bees carry in their honey-sacs or in their blood?

M. R. KUEHNE.

Pomona, Cal., Oct. 17, 1898.

[The following is Dr. Miller's reply to the above.—ED.]

1. In a matter of so much consequence, the only safe advice must be to destroy all. There is a possibility that combs that have never had brood in them might be left with safety in some cases. When the disease is first contracted there is a limited time in which no spores have been developed, and nothing but the bacilli present. Keep in mind that foul brood is due to the presence of a microscopic plant, *Bacillus alvei*. The growing plant is a bacillus, and the seed is a spore. Compare it, if you please, to the thistle. A thistle is growing in a field, and you ask me whether, if you remove the entire plant, roots and all, there will be danger of any further spread of the thistle disease. The answer will be that it depends on the stage of the disease. If the plant is not yet in blossom, or if in blossom and no

seeds (spores) have yet been ripened and thrown off, the removal of the plant will be all that's necessary. If, on the other hand, seeds from the plant have blown over the field, digging up the plant will have little effect upon the future crop.

In the same way, before the bacilli have had time to ripen seeds (spores), if the combs that contain them are removed, that removes the disease. But if spores have been produced, and have gotten into all the combs, then all must be removed.

You will easily see that it is hard for you to be sure that no spores are present, so the only safe course is to assume they are present, and treat all the combs as diseased. If spores have been in all the combs, bringing the bees to the starving-point, and getting them to empty the combs of honey, will not suffice. Mr. McEvoy is most emphatic upon this very point, and says, "*All the old combs must be removed from every diseased colony,*" and that "all" involves empty as well as full combs.

2. I don't like to be positive upon this point; but as Mr. McEvoy considers it perfectly safe to use the hive again without disinfecting, it seems that it ought to be safe to use again the starters that had not been worked at all by the bees. But it would be a better plan to limit the number of starters given, so that you need not count on having any of them left untouched.

3. Mr. McEvoy says it is folly to scald bee-hives in which foul brood has been; but he also says that, if combs have been broken down so that the floors have been daubed with honey, the floors must be cleaned. The frames out of which the combs are melted will be much the same as the floor on which infected honey has been spilled, and can not be again used without cleansing.

4. In the honey, the whole aim being to get such honey used up before it can be used to feed the young larvæ. C. C. MILLER.

Marengo, Ill.

other the direct rays of the sun in and about the entrance. If the former is the cause, the bees might as well die on the snow as anywhere, for die they will, if they have this disease early in the winter, before there is any prospect of warm weather coming to stay; and all the fussing that is done with them is generally of no avail; but on the contrary, as a rule, it rather seems to hasten their death, if any thing, unless it comes settled warm weather, so they can fly out often to void their feces; and then, nine chances out of ten, they will dwindle down to such an extent before many young bees emerge from their cells that such a colony will be nearly or quite worthless. If the trouble is caused by the sun enticing them out when it is too cool in the air for them to fly, the cause should be removed by shading the hive. As the sunshine of February and early March is apt to entice out all bees more or less, and as the winds of winter are apt to blow cold air and snow in at the entrance of the hives, thus making the bees uncomfortable, I lean a wide board, as long as the hive is wide, in front of the entrance, this not only shading the hives, but keeping out wind and snow as well. Whenever a light snow falls I sweep the snow up over this board and still higher up on the hive, which gives additional protection. As this takes but a few moments, and gives outdoor exercise when I am apt to get too little, I consider that I am well paid for doing it. Should a day warm enough for the bees to fly occur, and I am at home, I take the boards down, laying them immediately in front of the hives, thus forming a nice spot, free from snow, for them to alight on, when the boards are put back at night. If I am not at home no harm is done, as the bees will fly out around the ends of the board, and come back the same way. Some think this winter care of bees too much work; but unless any bee-keeper's time is worth \$3.00 a day in winter I think he will be the loser by not taking time to do these things.

There is one point wherein some are deceived regarding dead bees on the snow. Bees can rise as safely from melting snow as from bare ground, if the air is only warm enough, and the board which is leaned over the entrance tends to keep the bees in the hives, and quiet, till the air is what it should be as to warmth. The degree of warmth required I find to be 45° in the shade providing it is still, with the sun shining; yet with even a warmer temperature the snow will often appear covered with bees, which the inexperienced are prone to believe were lost because the snow was on the ground. A little careful watching will show that these dead bees are those brought from the hive and dropped by the other bees while they are "house-cleaning." This house-cleaning is always going on when the weather will permit of a flight, and at such time all the bees which have died during the cold weather which has preceded this flight are carried out of the hive by the healthy bees; and where these dead bees are not too heavy the healthy bee rises in the air with the dead one, conveying it some distance



#### BEEES DYING ON THE SNOW.

*Question.*—Last spring my bees came out weak in numbers, and I thought the cause was so many coming out of their hives when it was not warm enough for them to fly, and dying on the snow. Some days it seemed as though the ground was fairly covered with them about the hives. Is there any way to prevent bees coming out of their hives in this way? If there is, please tell us about the matter in your department in GLEANINGS, which I always read the first thing when opening my paper.

*Answer.*—In answer to this I will give my plan to prevent such loss. But first I wish to say that there are two causes for bees acting thus; one of which is bee-diarrhea, and the

from the hive, when it is dropped to the snow. Again, 100 dead bees on the snow make more show than 10,000 would make on bare ground. For these reasons we are often alarmed when there is no real occasion for it. Chaff hives are a great protection for bees in winter, not only from extreme cold, but in not allowing the rays of the sun to entice the bees out under unfavorable circumstances; and where any person expects to winter his bees outdoors my advice would be to use chaff hives for that purpose, in all northern latitudes. But even with chaff hives I think it pays well to use the wide board over the entrance.

#### DOCTORS DISAGREEING.

*Question.*—What is the trouble that writers on bees and bee-keeping are so opposite in their opinions and practices? I have looked in vain for something I could follow with a certainty of success, and as freely as I would a teacher of any of the common branches of human knowledge. Don't any of you who write for the bee-papers know what you are writing about?

*Answer.*—Well, I don't want to speak for the other fellow; but I know a little about the elementary principles of bee-keeping, just enough to know that it does not exactly compare with the rules in arithmetic. Twice two makes four, every time, no matter by whom multiplied, nor at what season of the year the computation is made, nor in what locality; hence we have the rule of multiplication as being always the same; the same of addition, subtraction, etc. But if we come to apply any rule similar to the above to the bees we find it won't work, for the reason that every season brings its changes; every locality is different from another, and every bee-keeper does not "work in another's harness." For instance, one season, just at the close of our basswood-honey harvest, I found I could introduce a queen by letting her run in at the entrance, and smoking the bees two or three minutes after I had let her run in; and as I did not lose a single queen out of some thirty or forty I set it down as a rule that queens could be thus introduced safely every time. But when I came to use the same rule the next year I found it did not work as formerly, as three out of every four queens put in that way would be lost. At the time I was having such success a bee-keeper living in a different part of the United States wrote asking how to introduce queens, and in reply I gave him my safe (?) rule. Of course, he did not have the same conditions I did when I was successful, and, not working just as I did anyway, he lost every queen he tried. The result was he felt very much toward Doolittle as the questioner does toward all the writers on bee-keeping. Now, why was it that my correspondent failed with the plan, and that I did later on? Simply because conditions were not alike in all the cases. Thus we see that no rule in bee-keeping can be formed that will do to follow throughout the country, as can the rules in arithmetic; and the only thing we can do is to try the plans of others *cautiously* till we know they are suited to our wants, using

charity all the time, otherwise we shall be something like that "American Duel" the late James Payn was so fond of telling about, wherein two duelists, with one second, met within doors and drew lots to decide which of them should shoot himself. A was the unlucky man, and, without a word, he retired into the next apartment to carry out the purpose of self-destruction. B and the second, both very much moved by the tragedy of the situation, remained in listening attitudes. At last the pistol was heard, and they were shuddering with emotion and remorse, when suddenly in rushed the supposed dead man, triumphantly exclaiming, "Missed, by thunder!"

There is a great difference in men. Some experiment carefully, proving every thing critically, step by step, as they go, arriving at an almost definite conclusion with the first experiment, while others experiment in such a careless manner that their experiments at the end of several years are of little value. Notwithstanding all of these drawbacks, any careful reader of what is written on apiculture will find much of value after he has sifted the chaff from the wheat. It is often necessary to apply what was written a long time ago in the "good book," where it says, "Prove all things; hold fast to that which is good," when reading much of the literature of the day on many other subjects besides bee-keeping. However much there may be of imperfection in our bee-literature, I should be very loath to dispense with it for \$100 a year, for it is to this same literature that I owe nearly all the knowledge I possess relative to apiculture.



#### PLAIN SECTIONS WITHOUT SEPARATORS OR FENCES.

*Mr. E. R. Root.*—I notice in GLEANINGS of Nov. 15th a Straw in which Dr. Miller mentions plain sections being held in place without separators. Now, as I have been somewhat mixed up in the bee-journals with a way of using plain sections without the use of a cleated separator, but having free communication all around the section, you have perhaps noticed my name in its connection. If so, I wish to inform you that I have succeeded in perfecting a super with sections so arranged. It is my intention to exhibit the same before the convention of O. B. K. A. at Guelph next month; and if it meets with approval from the wisecracks (which I have every confidence it will) you will no doubt hear more from it soon. I notice also in last GLEANINGS you speak about wet, wet, wet. We too are having wet, wet, wet, and wet again—rain eight days out of ten for the last four or five weeks. I trust this may stimulate the clovers, which received such a parching during July and August last.

D. W. HEISE.

Bethesda, Ontario, Can., Nov. 22.



THE Minister of Agriculture of Mexico has ordered a Spanish translation of Langstroth's work on the bee. This will be a boon to our Spanish neighbors in the tropics.

AT the last meeting of the Ontario Co., N. Y., Bee-keepers' Association, the sum of \$5.31 was raised for the Langstroth-Monument fund. The same has been received and will be duly credited.

I OMITTED to state in our symposium that the plain section will probably render feasible the use of machine section-cleaners when old-style sections would not. We have already got track of one that we feel sure will be a success; and as soon as it is ready to put on the market we will give notice through these columns.

SIXTEEN extra pages this time. The symposium in this issue takes so much space, together with the index, that we found it necessary to enlarge this issue. By the way, how do you like our Christmas number, taking it all in all? We are planning new features for the coming year; and those of our readers who stay with us, I feel sure, will be richly repaid.

#### ENGRAVINGS OF FENCE HONEY MISLEADING.

SOME criticism has been offered, and perhaps not without some grounds, that the engravings in the *Review* and *GLEANINGS*, that have shown fence honey, have been misleading to some extent. In this issue I show some very fine honey produced in old-style sections, and right below it some fence honey. At the risk of committing the same sin again I will say I honestly believe that that shown in the first named, while it looks as nice as the other, is considerably better than the average *fancy* in old-style sections, while the fence honey is very close to the common run of the fancy that I have seen in plain sections.

#### SECTIONS FILLED SOLID TO THE WOOD.

MR MERTON B. CHASE, one of our local bee-keepers, who produces such fine honey, thinks we ought not make too much of the fact of having the cells sealed next to the wood in section honey. If we set up too high a standard he fears that, in actual practice, we may not be able to reach it, even with our fancy. There is a good deal in this; but somehow I do like to look at solid slabs of honey sealed clear out to the wood; and if the fences, or any system of management, will enable us to do it, let us learn how it is done. I do not claim that the fence alone will accomplish it; but with other agencies with it we may be able to go a long way toward it.

#### BEEES AND THEIR COLOR NOTIONS.

IN the *American Bee Journal*, the question is asked in the Question Box whether bees are less likely to sting one with white clothing than with black, or whether bees are in any way irritated by any particular color. In response to the first, the answer is "yes" from nearly all the 26 bee-keepers. As to the second question, there is less certainty; but when an answer is given, dark or black is specified. Our readers will remember that I once doubted whether black had any thing to do with irritating bees, and made fun of Dr. Miller for suggesting it. Reports immediately began to come in, sustaining the doctor's position, and poking fun at me. There is now no room for doubt, even if I am the one that is worsted.

#### J. E. CRANE AT THE HOME OF THE HONEY-BEES.

WE are enjoying a visit with Mr. J. E. Crane, of Middlebury, Vt. I fully intended to call on him this summer to talk fence and plain sections, as he has had some experience with them this past season; but as it was not possible for me to do so a correspondence sprang up, a part of which is given in this issue. You can imagine with what pleasure we have been discussing a number of these little problems; and as Mr. Crane is a man of wide experience, owning and operating some 500 colonies, I feel like "banking" on pretty much all he says. I have been fortunate enough to submit proofs of all the fence matter to him before sending it to press; and while I have not directly secured his seal of approval, I believe we can not be very far out of the way or he would "straighten" us out.

He will remain with us for several days, and I wish I could invite our readers to our little unconventional conventions that we have every evening over at the house. Perhaps later I may be able to give our readers a kodak-phonograph peep behind the scenes. We shall see.

#### DOOLITTLE AND HIS MEAT-BLOCK.

ELSEWHERE in this issue I have referred to the fact that Dr. C. C. Miller eschews elaborate office furniture, and takes in its stead a common wooden stool for his typewriter desk, and that reminds me that G. M. Doolittle, of Borodino, N. Y., a man who is equally prominent as a writer and as a bee-man, uses a sort of meat-block as a typewriter desk. He hies himself away, or did do so, to a little office in his shop, where are a stove, stationery, books, and bee-journals. Well, when I was escorted into this sanctum I exclaimed, "Why don't you have a nice office desk, befitting your position as a professional man?" I can not remember exactly his reply, but it was something to the effect that he was nothing but a plain ordinary man, and that a meat-block on which to support a typewriter was good enough for him. But why didn't he have a light cheap table? Said he, "I want something solid so that, when I strike the keys, they will respond to my touch." Then I turned and looked at Doolittle, and took in his powerful physique.

When I measured with my eye the size of his hands and the strength of his muscular arms I concluded that a meat-block was about right. He needed something that would not permit of a typewriter joggling as it would do on a light flimsy table.

I do not know whether these personal reminiscences concerning our apicultural writers are interesting to our readers or not; but I believe some great man has said that half the world is interested in knowing how the other half lives; at all events I am sure that half of our bee-keepers are always interested in knowing something about Doolittle and Miller. As a pair they came very near being the leaders in apicultural literature, in spite of the fact that they do not know any better than to use such miserable cheap desks on which to pound out their thoughts.

#### SNAPSHOTS AT THE HOME OF DR. C. C. MILLER.

ON my return from Omaha I stopped off at Marengo, Ill., the place where Stray Straws are gathered. Of course, I was armed with a camera, but I did not use it on this occasion, as I borrowed the doctor's, who was so well pleased with my little folding pocket kodak that he bought one like it. I told him one forenoon that I wanted to see him get down to business writing Stray Straws, and that he should sit in his office chair, in front of his favorite mahogany roll top or drop cabinet desk, with his favorite bee journals and other paraphernalia near at hand, and that he himself was to put on his blandest smile.

Instead of procuring a very elaborate office desk he picked up a common stool on which was his typewriter. This he placed in front of the lounge. In place of a swing-back swing around elegantly equipped office chair he took out a common straight-back affair. He then pulled off his coat and vest, hung them over the back of the chair, scattered books and papers, especially bee journals, around on each side of him, on the floor. Then I took the little kodak, set it on another stool, and proceeded to take a snapshot, or, rather, a "time exposure."

"There, that is splendid," I said; but Mrs. Miller and Emma protested, "Oh, that vest looks so *distressed*!" and then, how it looks to have books and papers scattered all over the floor!" I insisted that I wanted every thing just as the doctor *usually* has it when he is writing Straws. To fix him up real prim, and to have every thing orderly, wouldn't do. They finally yielded, though reluctantly, and I pressed the button. I don't mean to imply that the doctor is more disorderly than the *average man* who has women "as neat as wax" around to "pick up after him." But I wanted our readers to see the man of Straws in his free and easy style "at home."

I asked the doctor why he set his stool so far out in the room—why he didn't tie himself off into one corner. "Oh! when I get tired," he answered, "I stretch myself out on the lounge, and rest."

Well, the result of the shot is shown in No. 2. I don't envy him the stool and the *straight-*

*back chair*; but I do begrudge him that comfortable lounge, so inviting, and the *time* it takes to use it. Yes, I begrudge him that quiet retreat at home, away from the whirl of machinery and the frequent interruptions from employees.

The doctor has a beautiful home, inside. Magnificent and expensive hand paintings adorn the walls. Books, papers, and easy-chairs greet the visitor.

After I left that home—a place that seems like home to me—the doctor tried his hand at kodaking, and the results are shown in 1, 3, 4, 5, and 6. Under No. 1 the doctor wrote:

1. Miller frame,  $\frac{1}{2}$  bottom-bar not yet nailed on. 2. Frame filled with foundation, and little sticks embedded. 3. Foundation so far drawn out that sticks no longer show. 4. Same with unsealed honey. Oct. 13, 1898.

The doctor showed me some of his frames of foundation, and also the combs that had been built out on the sticks. I would explain that he uses square sticks about as small as can be sawn, say about the size of a toothpick, and in length about equal to the depth of the frame. Foundation is put in, and then the sticks are inserted in their proper place. I believe the doctor values the sticks because they are self-supporting, require fastening neither at the top nor bottom, and effectually prevent all sag of the foundation, thus enabling him to use sheets that fit clear out to the end-bars as well as clear down to the bottom-bar. He showed me quite a number of his combs that were built out from foundation thus prepared, that looked like solid boards.

Of snapshot No. 3 the doctor wrote:

Miller house from southwest. Sept., 1898.

This is a very natural view. Say (his women folks mustn't read this), I have been wondering why the doctor did not paint the whole of his house instead of stopping at the point just over the tops of the trees. I know he does not believe in painting his hives, but I did not suppose he was a believer in doing a half-way job on the outside of the house; for inside it's just lovely.

Of picture No. 4 the doctor writes:

Bees brought home from out-apiary, waiting to be put in cellar. Shop at left. Oct. 15, 1898.

These are eight-frame hives having cleats at the end, for convenience in lifting and handling. They are all numbered by means of a tin tag painted white, the number being in black. The tags may be seen on the front of the hives. Under the shop shown at the left is a large bee-cellar. The first floor above is used for nailing up general work, such as hives, and for putting up supers. The second story is for general storage.

No. 5 (the number does not show, but it is beneath 2 and 6) is thus spoken of by Dr. Miller:

Wagon-rack for hauling bees. Holds 22 colonies, and 90 in box under rack. Oct. 15, 1898.

Something of this kind is almost indispensable. Without it one could carry only about half as many colonies, and even then with not the same security.

Of No. 6 the doctor has this to say:

Sixteen potatoes (Carmen No. 3,  $\frac{1}{2}$  bushel), 28 $\frac{3}{4}$  pounds; 3 largest potatoes weigh 6 lbs. 9 $\frac{1}{2}$  oz. The stick lying on the potatoes is a foot rule. Oct. 11.



And when he was come near he beheld the city, and wept over it.—LUKE 19:41.

Then said Jesus, Father, forgive them, for they know not what they do.—LUKE 23:34.

In the Old Testament we read of God's anger with people when they were disobedient, and committed sin; and we read, too, of the terrible judgments that he visited on them when they were persistently disobedient; and, for that matter, even during this present day we have abundant evidence of God's terrible judgments when people keep right on committing sin after repeated warnings. When Jesus came into the world he saw sin just as God sees it; but as he was *both* human and divine, he took a middle stand, as it were, between humanity and God the righteous Father. When he looked over Jerusalem he had the power to destroy it utterly; but his human heart comprehended and sympathized with humanity; and instead of the condemnation that the inhabitants deserved, especially those who stood in *high places*, he stood still and wept in real sorrow. For some time back I have been contemplating humanity—not other folks, mind you, altogether, but I have *almost* wept in contemplating the sinfulness and depravity of my own heart. I am one of humanity, and a poor feeble specimen at that; but yet humanity streams through my veins, and I am part and parcel of even *sinful* humanity. Were it not for the blood of that same Jesus who cleanseth from all sin, where should I be?

I am now going to take up an interpretation of the little texts I have chosen, in a little different way from what the average minister of the gospel would take it—not that he is wrong, by any means, but only that I, perhaps, may have a glimpse of a field different from his own. I want to consider first the especial kinds of sin that the great business world is guilty of—sins that we may well weep over instead of getting angry about them and calling people hard names. May God give me grace and wisdom that I may avoid showing up human weakness and that alone. We all know how easy it is to look at the shortcomings and frailties of our neighbors. Please, dear reader, do not think I wish to show how bad people are compared with myself; and please do not think that I love to dwell on that side of humanity.

When we wanted to buy a new large engine we consulted a great many catalogs, and talked over the matter with a great many different agents for great manufacturing establishments. An electric plant has lately been placed in our town. They have a new engine—a most beautifully running machine, built especially for running electric work. We decided to purchase one of that make. One thing that influenced us strongly was that the agent declared that every engine of their make was tested while standing on three points or cones.

It was made to work so still, and was so perfectly balanced, that it could be run at full speed without being even bolted down to the floor or any thing else. I considered this a sufficient guarantee of the quality of their work; and the one in our town runs so still that one might easily use it for a writing-desk. So the order was given for a 400-horse-power engine. It was very carefully taken from the car, planted on a solid bed of masonry, and securely bolted down. But imagine our surprise when it not only shook the foundation but also our buildings adjoining, even before trying to make it carry a load. We wrote to the manufacturers, and remonstrated; but they declared most emphatically the engine was perfectly balanced before it was sent out, saying they would send a man around after a while. But when Thanksgiving day came, and no man appeared, we began to be troubled, and wired them to send an expert at once. Here is the answer to the telegram, of course omitting names:

At your request, expert will arrive Wednesday. Engine ran beautifully here.

You will see that, even in a telegram, they declare once more that the engine ran perfectly before it was shipped. I met the expert when he got off the train, for I felt troubled in regard to the matter, and was anxious to know if it was any fault of ours in setting it up. Perhaps I might say that I declared in the outset that that big balance-wheel, weighing several tons, was not accurately *balanced*; but our people assured me that that *could* not be. The expert took off his coat, and went right to work. I stood near to provide any thing that might be wanted. He said he wanted a lot of putty, or, if it were handy, some yellow clay worked up into balls. When I suggested that five or ten pounds would probably be sufficient, he smiled and said he guessed I had better get clay, for they might need *thirty* or *forty* pounds. He first had a rest made solid and secure, right close to a polished part of the great shaft; then while the engine was in full speed he made a mark on the shaft as it went around. The balls of clay were then stuck fast to the inside of the rim of the balance-wheel, on a point opposite where the mark was made on the shaft. It was not thirty or forty pounds that was needed to bring that great wheel into balance, for before we had got through we had put on *172 pounds!* No wonder our buildings weaved to and fro when that great wheel revolved. The makers had done *something* toward balancing it. They had put on about 60 pounds of cast iron, and they had got it in the proper place, but they did not get on enough within 172 pounds.

Now, this engine was made at a very large establishment; and I believe that, as a rule, they do very nice work. The only reason the expert could give as to why they let a machine worth \$2000 go out of their works in that shape was that we kept hurrying them up when we found they were not likely to ship it promptly at the time agreed on. They were in too great a hurry to get it aboard the cars on the date specified in the contract. Shall

we put in a bill for damages, delay, etc., and decide that they are a set of clumsy rascals? God forbid. No lives were lost on account of that carelessness, and probably no great damage to property resulted. The foundation, that cost a lot of money, may have been somewhat injured. We can not tell exactly just yet. In view of the fact that we have to meet such things almost every day in a large business, shall we not rather weep over human frailty, and conclude they really did not *know* how badly they had done their work? We have not heard from them at the present writing, so we do not know what they propose to do about it.

Very soon afterward I felt obliged to go to the dentist's because a filling had dropped from one of my teeth. With all the care and responsibility of our new establishment, a grumbling tooth was not a very desirable companion. Whatever you do, dear friends, keep your teeth cared for, especially if you have responsible work on your shoulders. When I got back from the dentist's, one of the carpenters greeted me with: "Mr. Root, has anybody told you that the new elevator has gone all to smash?"

The new elevator had just been started that morning. It cost \$400, and it was built to carry a big two-horse load of lumber, even if the lumber was 16 feet long, from the basement to any one of the rooms, even up to the third story. When I first heard the news it gave me a sort of dazed feeling. I said to myself — no, I guess it was Satan who whispered it — "Well, you might as well give up and quit trying to have any expensive machinery; just disaster after disaster, and breakdown after breakdown, etc." The above is what I *thought*, mind you. I did not *say* a word out loud, but passed along trying to look cheerful and pleasant. My little prayer, "Lord, help!" started up of itself, and I added an emphatic amen, for I felt it was needed; and then my informant went on. He said, "They say it started up of itself." He meant the elevator; but I was thinking of my little prayer. What a pleasant thing it is to have good things "start up" of themselves from the force of habit! Then he went on: "It first went down to the bottom, then it turned and started for the top. The cable unwound and got into the machinery, and tore the big drum all to smash. The whole thing is a perfect wreck." I had been hoping and praying that the thing was not so bad after all. Mechanically I approached my box at the mail-desk. The lady who opens the mails handed me a letter, saying, "I have just opened this letter this very minute. I thought perhaps you would like to see it." Here is the letter. I think I may venture to give the name this time.

*Gentlemen:*—Our man reports, on returning here, that there was one thing that he forgot to tell your carpenter. When he builds the house on the roof, have him put a piece of wood about two inches from the under side of the cable, and about 10 feet apart, so if the cable should possibly slack up it will not sag. When the cable is taut it will run free; but if any thing should get underneath the platform, and the cable should slack up it would sag on the roof between the top sheaves, and this would not let our

slack-cable device work properly. Please have your man attend to this. EDMONDS ELEVATOR CO.  
Cleveland, O., Nov. 30.

Well, the letter was a partial answer, at least, to my little prayer. It threw the responsibility on the manufacturers and not on ourselves, you see. Now, dear friends, I suppose you know that I never rejoice when I find out that some loss lies on my neighbor's shoulders instead of on my own. That would be a poor sort of Christianity, but it was perfectly right and proper to rejoice that the disaster was not the result of any stupidity and blundering or meddling on the part of our own people. Pretty soon I found John and Ernest, and they told me they had already telephoned the factory, and that the man who put up the machine was on the way to our place. He reached here an hour or two later, and found the damage was only a few inexpensive castings that could be easily replaced. He telephoned for them, and in a few hours our big elevator was "a thing of beauty" once more.

By way of recommend to the above elevator, permit me to give part of a conversation that occurred between myself and the man who came here to set it up. When he had finished his job I said:

"Mr. A —, does this elevator require a specially appointed man or boy to run it, or can it be used by any one who wants to move freight?"

"Why, let anybody use it, of course, who wants to. Any man or boy in any establishment will very soon learn how to work it. It can not get more than so high nor more than so low, and that is all there is to it."

"Do you mean to tell me, Mr. A —, that you put up elevators all over the country, and guarantee them, with the understanding that any man or boy in the establishment can work them?"

"To be sure, we do."

"Well, then I want to say to you that you must have a very good machine indeed, and must take very great care and pains in putting it up, for we have had more breakdowns and troubles with elevators during the last few years than with almost any other one thing."

Now, the point before us is this: Here was a good man and a gentleman — an expert in the business, and an old hand at it, and yet he forgot a matter of *vital importance* until he got on to the train and was on his way home. Had the company wired us, instead of waiting to write a letter, it would have saved them quite a few dollars. One who goes through the world demanding his rights, right and left, wherever he goes, might call the above criminal carelessness; but a better way is, I think, to say that, as no lives were lost, and as the company made good the little mishap, we had better let it drop, remembering that, in this world of ours we can not have absolute perfection in any thing.

My illustrations so far have been with machinery. How is it with doctors who hold human lives in their hands — yes, on the very tips of their fingers? I wish I could say that

there is less half-heartedness among the medical fraternity.

Some years ago my old friend, Rev. A. T. Reed, thought I was getting a little too extravagant on the lean-meat diet. He said there were excellent physicians in most of the great cities who did not indorse such treatment at all; and as my health was poor he urged me to consult one of the leading physicians of a near city, and promised to go along with me. The great man sat at one side of the room while I sat at the other. Bro. Reed asked him if it was not necessary to look me over a little. He said it was not. He could tell all he needed to know about me by looking across the room. Instead of the doctor asking the patient questions, the patient asked the doctor questions, and the doctor responded mostly by yes and no. When I asked him what the fee was for a few minutes' conversation, he opened his lips enough to say "Ten dollars," and that was about all. He did not write any prescription, did not give any medicine, nor any thing at all except a few pills, which he said might give temporary help. He said I should get away from business, and go to California. After I got to California I found there was just as much need there of avoiding fruits and vegetables as there was at home. In fact, I rather decided that I felt *better* out in the frosty air of my native home than in a country so mild that it never freezes. Now, I am trying not to be too severe in this case. I try to believe this physician was a good one, and a great one in certain cases; but I do think, in view of the fact that he was going to get ten dollars for his services, he should have looked the patient over, asked him some questions of his own accord, and given him some sort of advice that would make a sentence of more than three or four words. My opinion was, and is still, that he was not only a *half*-hearted doctor, but that he was a *hard*-hearted doctor. They called him a "Christian physician;" but it is hard work for me to scrape up faith for that kind of Christianity. I might give you a dozen more illustrations, but I shall use only one.

Our eldest daughter had been for some years in very poor health. A good many physicians were consulted, with about the result I have mentioned above—a good-sized fee coupled with a good-sized indifference, so it seemed to me, in regard to the life or death of the patient. In this I refer to the big city doctors. Our home physicians did what they could, but confessed the case was a difficult one. We finally went to a leading surgeon in Cleveland. He said she would have to undergo an operation. It would take several weeks, however, to get ready for the operation. Some apparatus was sent, for her to use meanwhile, but it was not at all suitable. It was returned, with full explanations. Some more was sent, but that was not suitable. The *third* lot was promptly returned because they were too indifferent in regard to the matter to give the case ordinary attention. Then these great surgeons tried to make us pay for stuff that could not be used, and never was used, but promptly returned. They did not get their

pay, however, neither did they get a chance to perform the surgical operation.

By my advice our daughter then consulted Dr. Lewis, the lean-meat man. He is not a surgeon, you know. He made an examination, and thought she *might*, perhaps, be obliged to have the operation performed, but advised that she get well and strong first on the lean-meat diet. She said she could not bear beefsteak, and that it was not any use to try to treat her that way. She said she would die that much quicker, that was all, and perhaps die of starvation if she was obliged to *eat meat*. She *did* learn to eat meat, however, and now prefers it to any thing else, even if she could have her choice. But my story is not done yet. I think the second time she called on Dr. Lewis he noticed something peculiar in the way she walked. He asked her a great number of questions, made a particular and very thorough examination of her spine, and then declared abruptly that the trouble was in her spine, and that the surgeons were entirely off the track. They were going to take away organs that were all right, or perhaps suffering indirectly from the real trouble—the spine. He said she would have to go to bed and lie down, and not get up for a month. Then he advised sending her to some place where she would be treated particularly for diseased spine. These people wanted an enormous price for taking her into their institution. After she got there she did not have the comforts of an ordinary home. Her room was not sufficiently warmed; her food was not properly prepared, and, in short, they had an enormous price for very meager attention, and we had to have some downright quarrels, almost, over a sick woman's bed, before we could get them to make the jacket or "harness" needed to hold her weak spine in place. They finally did make something that answered temporarily; but to get a good apparatus we had to send to New York city and throw away the old one. Of course, the readers of GLEANINGS will know that we prayed as well as worked to save the dear one's life, and God heard our prayers. She learned to relish the lean-meat diet, and, as I have told you, preferred it to any thing else. And, by the way, she learned to love and value her own home, after she returned from the city, in a way she never did before. Little by little she got outdoors so as to take the fresh air. First she took a few steps on the porch; then I would see her slowly going down the walk. Proper food, pure air, and good care helped her to pick up gradually but surely.\* She still wears the apparatus, to prevent her spine from getting back into its old

\*Let me explain to those who may be similarly afflicted, that her trouble was what is called Potts' disease, or tuberculosis of the spine. When she first undertook to walk, her shoe had to be built out three-fourths of an inch. You see the disease had gone so far that one limb was really shortened or drawn up that much. When she began to get out in the open air, a little of the extension of the shoe was taken off, and after a while a little more, and in five months it was all removed. She now stands squarely on both feet, like anybody else. This last, I confess, was a revelation to me. I supposed that, when one limb was shortened by disease, it would have to remain so.

crook, and she has recently walked half a mile and back in one afternoon, as straight as anybody, and she will in a short time, doubtless, be able to dispense with her "harness," as we call it, entirely.

Now I am coming to the whole point and summing-up of what you are to do. Other homes have trials, as I know from the letters from many dear friends like those in and around our own home. Most of my readers who are gray-headed have learned by sore and sad experience that we must not demand too much of humanity. Troubles will come with machinery in consequence of half-heartedness in humanity; and, sadder still, this same half-heartedness, or lack of thoroughness, is to be found where human life and health are at stake. What shall we do about it? Shall we go to law and seek to recover damages? Well, if we were never half-hearted *ourselves* in a like manner, we might give that sort of advice.\* Of course, there are times when criminal carelessness has to be punished. The man who deliberately sells tobacco or beer to boys needs to be stopped at once by the strong arm of the law; but if your hired man makes a mistake resulting in a loss of property I would advise you not to be too hard on him; and if your family physician has too little enthusiasm in caring for sick ones, stand by him, go with him, and try to infuse a little genuine enthusiasm into him. Enthusiasm is contagious, thank God, and we all need to catch it—that is, we need that kind of enthusiasm that prompts us to love our neighbors *more* and ourselves *less*. This world is full of troubles such as I have outlined. Sometimes it does us good, and does the world good, if we can weep over it in sorrow as Jesus wept over Jerusalem while he prayed for thoughtless humanity; and a great many times, when things are going very badly and something has to be done, I think it is well to weave into our prayers the wonderful charity and love expressed in that *other* text, "Father, forgive them, for they know not what they do."

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OUR ROLL OF HONOR, OR THE NAMES OF  
THOSE WHO HAVE TAKEN GLEANINGS  
FOR 25 YEARS OR MORE.

Every little while somebody, in renewing his subscription, makes the remark that he has "taken GLEANINGS right along ever since it was printed by windmill power." Perhaps I might remark that the first sheet of this journal was taken off the press 26 years ago the 6th day of this month. There is not much danger of the event being forgotten by either Mrs. Root or myself, for a little blue-eyed girl came into our household just a few hours before the pages of GLEANINGS were spread out to my gaze. Well, never mind. Blue Eyes has now a very pretty home of her own, within a very moderate stone's throw of her father's and mother's home. And now I want to know how many there are whose eyes meet this who have taken GLEANINGS for 25 years or more. Just send in your names, and

a little more if you feel like writing it, and we will try to give it a place in print. Your old friend A. I. Root has been planning a very modest little Christmas present for all who have stood by our journal through thick and thin during all these years. We will try to have a little symposium of letters from the "veterans," in our next issue. I wish it were possible for us to get together and sit down and tell stories about the olden times. Some of these younger ones do not seem inclined to *believe* that we have been over and over, years ago, the things they are just now discovering, and which are supposed to be brand-new. But we would not exclude the younger ones from our party, dear friends. Do not imagine we have got the idea that *wisdom* dies when *we* die. We are glad to see the boys outstrip us and leave us behind. Who ever heard of a father and mother who were jealous of their own children? Now, then, get up and speak your little piece. If you should stand up all at once, and talk all together, it wouldn't matter, for we will put it all in order when it reaches the Home of the Honey-bees. I am dictating this on my 59th birthday, Dec. 9, 1898.



DIGGING POTATOES, ETC.

In all my potato-growing thus far we have dug our potatoes with a sort of shovel-plow digger—a shovel-plow with steel rods sticking out behind. Well, this digger is an immense saving over digging by hand; in fact, I have dug my potatoes and put them into the cellar several times, where the yield was good, at a cost not exceeding 3 cts. per bushel. Now, if there were not any thing more to add, our friends might well inquire what I wanted of any other kind of digger. Well, there *is* just one other circumstance that *ought* to be mentioned. Three fourths or perhaps more of the potatoes can be put into the cellar at a cost of 3 cts. a bushel; but to get the other fourth out of the ground and get them into the cellar will cost anywhere from 10 to 15 or perhaps 20 cts. a bushel; and, worse still, there will be a great many nice potatoes that you will never get at all. We usually put in rye after our late potatoes; and to get the ground in good trim we go over it with a two-horse cultivator. This collects the vines, and brings a goodly share of the remaining fourth of the potatoes to the top of the ground. The boys follow the cultivator and pick them up; then we run the Acme harrow over to fine and level the ground, and this brings to light another lot that has to be picked up. Then a boy follows the grain-drill and picks up all he can find. After a good shower there is still quite a lot to be picked up if the weather does not get so cold meanwhile as to freeze them. This season we had a good many spoil in this way. Now, I planned to have one of the best high-priced diggers, that would leave *all* the pota-

\* Forgive our debts as we forgive our debtors.

toes on the top of the ground, so that they could all be picked up at one operation. At the Omaha exposition where all the agricultural tools known, or pretty much all, were on exhibition, I selected a potato-digger; but owing to the continued and unprecedented wetness we were never able to give the digger even a fair trial. An agent for another digger that had much less machinery about it thought his would work all right, even if the ground *was* wet; but we had to give it up. Neither one of the high-priced machines did very much better than our old shovel plow digger that has dug all of ours for ten years past, and we have loaned it to the neighbors right and left, and it still does very good work. One of the high-priced diggers was returned to the manufacturer: the other we are to hold over and test another season; and we finally, as a last resort, finished our potatoes with the old digger. But rains caught us so much, and heavy frosts later on, that we hustled them into the boxes wet and muddy, and got them into the cellar as best we could; and while it rained we poured them from one box to another, shook out the dirt, and got them dried out sufficiently to prevent rot. But I tell you we had a hustling time of it. We lost a few of the New Queens in that patch up in the swamp, that made a second growth, by having them frozen where they stuck out of the ground. We took hoes and tried to cover them up before each frosty night, but some of them got caught nevertheless. On account of the exceeding wetness we could not get down under the hills as usual, and more of the potatoes were cut in digging than I remember having any year previously.

Now, there are several varieties of potatoes that will keep over until planting-time just as well where they are cut at digging-time, as any of the others. We are saving out these cut ones for our own planting. I have done this several times, and do not see but it answers just as well as any. Those that got frosted by sticking out of the ground we overhauled shortly after digging, and the frosted parts cut off. These, too, seem to be keeping all right. I see by the *Ohio Farmer* and *Rural New-Yorker* and other agricultural papers that many others owning high-priced diggers have, like myself, been obliged to dig by hand this season on account of the incessant rains—at least I see they have been having the same degree of wetness all through York State, Ohio, and many of the neighboring States.

Now, when we are obliged to dig by hand, or with a cheap shovel-digger, a little calculation will, many times, save much expense. While visiting Dr. Jaques (mentioned in our previous issue) I found his men digging Early Ohio potatoes on a plan that was quite expeditious for handwork. The soil around his home is very light and friable; in fact, it is an ideal locality in the way of soil for market-gardeners. The potatoes were dug with long-handled forks having the tines pretty close together, and about the size of those in an ordinary manure-fork. The digger puts this fork under the hill, takes up all the potatoes

and soil, and turns it over. Then, without stopping to stoop down to touch the potatoes with his fingers, he lifts or pushes them out of the soil over into the furrow between the rows of potatoes. By going up one row and down the next he throws the potatoes from the two rows into one furrow. After they are dug, one horse pulls a small light stoneboat between the rows of dug potatoes. This stoneboat contains two rows of potato-boxes. Two men pick the potatoes from the ground and throw them into the boxes as they stand on the boat. The horse is trained to move along at the word of command, so as to keep the boxes just opposite the potatoes. In this way they do the work very expeditiously.

The doctor was selling very nice Early Ohio potatoes, at the time of my visit, at 25 cts. a bushel, while here in Ohio, at the same time, good table potatoes were bringing 75 cts. A good many things are grown in that beautiful western soil for much less money than we grow them for here at home. In our locality a good many of the late potatoes are extra fine and large; but no one has succeeded in getting them out of the ground, in our neighborhood, without having them covered with mud; and a good many also let the late potatoes push out of the ground so they first got sunburnt and afterward frosted. Now, the sunburnt or green potatoes are just as good or better for planting, though a great many do not seem to know it; and even the frosted ones can be utilized all right, as I have explained, by cutting off the soft portion, providing you have a variety that will not rot after such treatment. You can tell only by experimenting; and I judge others have discovered this as well as myself, for we have had orders from several parties saying that, if we had any Bovee's or Manum's Enormous that were cut in digging, which we were going to sell for seconds, they would rather have them at the price of seconds than to have small potatoes.

I have not mentioned either of the machines I have tested this season, because I am hardly prepared to give them a recommend under the circumstances, and at the same time I am satisfied that both will do excellent work when the soil is in the right condition; and I confess that it never occurred to me, until after this season's experience, that potatoes might be dug with a fork when it is too wet to dig them with any sort of machine. But in any case if you dig potatoes when the ground is too wet you will have to take along a lot of clay and mud; and if there is no chance for drying the potatoes in the field, you will have to dry them by some means pretty promptly in the cellar. A neighbor suggested building a fire; and, in fact, we tried the same thing with some steam-pipes that passed through one end of our cellar, but I do not think heating will answer at all. It just makes them rot. Give them all the air you can in order to dry them out, but let the air be just as cold as possible, and not freeze them. Our slatted potato-boxes are not only a convenience but a necessity in handling and drying out potatoes under such circumstances. We have now in

our cellar over 1000 bushels, all safe so far as dampness is concerned.

#### A REMEDY FOR THE RECENT TROUBLES IN HAVING WHEAT FALL DOWN.

If Mr. Root will sow some mustard with his wheat where it is on such rich ground, it will keep the wheat from falling down. I have seen it tried here close to the city on garden lots this year, with perfect success. I do not know how much seed was sown to the acre; but for best results it ought to have one stalk to each square foot of ground.

W. A. MOORE.  
Taylorsville, Utah, Oct. 8.

Friend M., no doubt the strong branching stalks of the mustard will hold the wheat up; but one stalk to each square foot would give a pretty fair crop of mustard, to say nothing about the wheat. Would it not cut short the wheat crop? You see this would come in nicely for the bee-keeper; and the mustard seed could be so readily separated from the wheat that there will be no danger of any being left in the wheat if used for seed. But how about getting mustard into the ground? It strikes me that the mustard seed should be sown broadcast at such a time that none of it would ripen and fall out on the ground before wheat is harvested.

#### SHEEP EATING SWEET CLOVER.

I see in last GLEANINGS that Mr. Sawyer is giving you a pretty hard going-over about sweet clover. Tell him we have had it growing in our place for 16 or 18 years, and it only just about keeps going, and we have favored it to keep it growing, in black prairie soil at that. If Mr. Sawyer will spend his \$50.00 in a small flock of sheep, and let them tend his sweet clover, I do not think it will hurt his land or the sheep either. Ours eat it greedily.

H. C. SEARS.  
Thornburg, Iowa, Dec. 8.

Thanks for the above item, friend S., to the effect that sheep also will eat sweet clover. My impression is they would not have to be "taught" to any great extent. While I dictate this our good friend J. E. Crane, of Middlebury, Vt., is with us, and he says his horses eat sweet clover without any "coaxing" at all. In fact, he says they beg for it when going along the roadside.

#### APIS DORSATA AND THE PHILIPPINE ISLANDS.

I clip the following from a recent number of the *American Cultivator*:

##### GIANT EAST-INDIA BEES.

One of our acquisitions with the Philippine Islands is likely to be a new species of the honey-bee. It is called by naturalists the *Apis dorsata*, and is one-half larger than the American honey-bee, with a much greater capacity for making both wax and honey. In its wild state it builds combs on large forest trees or in clefts of the rocks in the mountains of the island. As it goes up the mountains for a distance of 5000 feet, it is believed that it can be acclimated so as to live in the United States. Mr. Frank Benton, of the Department of Agriculture, went to the Philippines to investigate this new kind of bees. He reports them not to be easily irritated, though, of course, if they do sting, a bee nearly twice as large as the ordinary bee would be a formidable antagonist. But as they take 20 to 30 seconds after they are angered before they can get their stings at work, Mr. Benton thinks they can be easily managed. Unfortunately a swarm which Mr. Benton captured in the jungle died on its passage across the Pacific. Mr. Benton was sick in bed. As no one on board would give the necessary attention, the bees perished. These bees have a wasp-like figure, with orange-colored bands encircling their bodies. The combs it makes are much larger than those

made by ordinary bees. If it can be domesticated in hives the hives must be very large ones. In fact, a room would scarcely be too large, and it might accommodate several swarms.

Now, there may be some truth in the above, but certainly there are a lot of mistakes mixed in with the truth. Mr. Benton went originally to the island of Cyprus, in the Mediterranean Sea. Then in pursuit of *Apis dorsata* he went on to India, and then south to the island of Ceylon. But, according to our geography, the Philippines are a very great distance from Ceylon and India, and twice as far from Cyprus. Mr. Benton did not go to the Philippines. I have thought best to copy the above, because just such blundering statements are the ones that go the rounds of the papers.

#### TENNESSEE AND THE CIGARETTE BUSINESS.

In 1897 the legislature of Tennessee enacted a law making it a misdemeanor to sell cigarettes in that State. A test case went up to the Supreme Court, and here is the decision:

The Supreme Court holds that cigarettes are not legitimate articles of commerce, because they are wholly noxious and deleterious to health.

#### FARM FOR SALE.

Farm of 157 acres, 12 miles from county seat, three miles from Ohio River and C. & O. R. R. Good honey location; close to church and school. For terms and full description call on or address.

JAMES M. DENHAM, Valley, Lewis Co., Ky.

#### 22d ANNUAL ANNOUNCEMENT

1899

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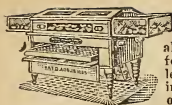
Vedette Bicycle { Pat. 21, for Men, 25 00  
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We also have a few Columbias, Model 46, and Hartford Patterns 7 and 8, on which we will quote prices on application.

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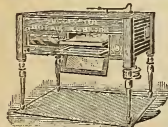
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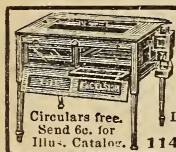
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We never raised as many or as good chicks as we did the past season. Our buildings are crowded; we want to reduce stock quick, and to do it will CUT THE PRICE so it will pay you big to buy now. Will sell you Barred and White Pl. Rocks, White Wyandottes, Lt. Brahmas, Langshans, and Pekin Ducks. Pullets and hens, \$1, \$1.50, and \$2; Cockrels, good breeders, \$2 to \$3; Trios, \$5 to \$6; Ducks, \$1 to \$1.50 each, \$3 to \$4 per trio. Early-hatched, healthy, vigorous birds; guaranteed to please. Above prices for a short time only. Send for 80-page free catalog of

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comes in the winter when eggs are scarce. **Green Cut Bone pre-Mann's New Bone Cutter** makes hens lay at any time. It doubles the egg product. Mann's Granite Crystal Grit, Clover Cutter and Swinging Feed Tray mean hen comfort and hen profit. Catalogue free.

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If you want all the tested new varieties as well as the standard old sorts in strawberries, I can suit you. I have 90 acres in strawberry plants. Strong, vigorous plants with big bunches of fibrous roots, absolutely free from disease. Can sell you

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## 1,000,000 Peach Trees

grown on the bank of Lake Erie, two miles from any peach orchards and guaranteed free from Scale, Borers, Yellows, etc. Large stock of Pear, Plum,

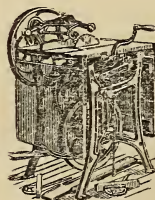
Cherry, Quince and immense supply of Small Fruit plants. Headquarters for Ornamental Trees and Shrubs. A quarter of a million of low down budded roses.

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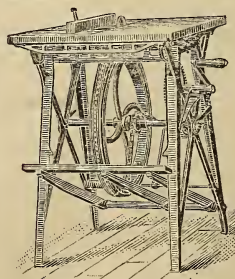
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Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. Sold on trial. Catalog free. 1-24ci

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This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, boxes, etc. **Machines on trial.** Send for illustrated catalogue and prices.

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#### BEE SWAX.

We pay 20c per lb. cash, or 28c in trade, for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 32c for best selected wax. Old combs will not be accepted under any consideration.

Unless you put your name on the box, and notify us by mail of amount sent, we can not hold ourselves responsible for mistakes. It will not pay as a general thing to send wax by express.

#### CATALOG FOR 1899.

As usual at this season of the year, our press is unusually busy, and running away into the night to do the printing required. We are printing 120 thousand 24-page catalogs for A. T. Cook, Hyde Park, N. Y., besides 25 thousand other little booklets; 8 thousand catalogs for J. M. Jenkins, Wetumpka, Ala.; and 10 thousand catalogs for C. N. Flansburg, Leslie, Mich.

Our own catalog is in preparation; but owing to the fact that our attention has been for the past two or three months confined to factory improvements we shall not have the catalog ready for distribution as early as we hoped to have. It will be at least the middle of January before we have any completed, and Feb. 1st before we have a large number ready to mail. We have the wrappers for almost our entire list all addressed, and ready to roll up the catalogs in as soon as they are ready. Do not write for a catalog before Feb. 1st, unless you want an old one. You will receive a copy just as soon as they are ready to mail.

#### FACTORY RUNNING AGAIN.

It gives us no little satisfaction to say that, after five weeks lost in general overhauling in our factory, we are running again on full time. All the machines throughout our entire plant, including an elevator in the warehouse and a pump some twenty rods distant, are now run with one large engine, by means of electric transmission for the power required at distant points. The cards from this engine show about 240 horse-power being used, and we have still to hitch on a 60 horse-power motor for new machinery not yet started, in the new addition. When we get our new rooms fully occupied, and the machines running, we shall be using close to 300 horse power.

We have a good supply of orders booked; in fact, the orders are already coming in faster than we can fill them, so that the outlook for business the coming season was never better at this time of year than it is now. If the demand continues at the rate it has started in we shall have to put on double turn much earlier than last year, in spite of our increased facilities and large stock of goods already prepared for shipment.

### Special Notices by A. I. Root.

#### VERY SMALL POTATOES.

In picking up high-priced potatoes, such as the Bovee and Triumph, and several other kinds, we let the boys pick up all the little ones, even down to the size of a hickorynut. These we offer for sale as thirds, and they are only half the price of the seconds. These little potatoes are all perfect, no scabby nor cut ones; and if you will give them a chance they will furnish large fine potatoes the next season; but they require better soil and a longer season to grow in. Where it is a long distance to send for potatoes, and you want only a few by mail to start with, I would recommend these thirds. At the present writing, Dec. 12, we have sorted out only three kinds—Triumph, Freeman, and Bovee.

#### VALUABLE CHRISTMAS PRESENTS FOR A VERY SMALL SUM OF MONEY.

Any one who will send us \$1.00 for GLEANINGS, and pay up all arrearages, may have for a Christmas present any one of the three following books:

1. *Pilgrim's Progress*—a large nice book of 384 pages, full of illustrations. The book is well worth a dollar.

2. *Domestic Economy*, a dollar book written by a doctor; in fact, it is quite a doctor book. We have a large stock of them, and that is the reason we are giving them away.

3. *The New Agriculture; or, the Waters Led Captive*. This is a \$1.50 book. While there is much in it that is good, I believe that father Cole's dreams of a "new earth" through sub-irrigation were not fully realized.

Now, if you do not want any of the three books mentioned above, we will allow you 50 cts. on any other book in our list for every dollar that you send for GLEANINGS after paying up all back dues. Besides the books we have quite a lot of Waterbury watches, and some of other kinds; also opera-glasses, telescopes, microscopes, carpet-sweepers, coffee-mills, and things we have usually advertised, and we will allow you on any of these 50 cts. for every dollar sent us for GLEANINGS as above. We have also a lot of Gospel Hymns, from 5 to 75 cts. each; 50 cts. worth of these for every dollar you send for GLEANINGS as above—see book-list page 944, this issue.

#### THE HOME PAPERS OF LAST ISSUE.

In response to my request to be notified in regard to things not right, and that our company seemed dilatory about making right, I have received just two letters. This is rather consoling to myself and to the younger members of our firm. Things have been bad during the past season, doubtless, but not so awfully bad as I feared might be the case when I wrote that Home Paper. Well, one of the two parties had been asked to state just how much would make his loss satisfactory; but for some reason he has not sent in any bill for damages, and our people were rather waiting for him to do so. The other was one of the kindest and most Christianlike letters I have ever received in my life. The writer said he had never sent in any bill for damages, nor even written a complaint, because he had neglected to examine his goods till it was so late he thought he would let it drop. Now, friends, although you may not have discovered the defect immediately on receipt of the goods, I should still like to hear from you in regard to any thing not as it should be. If a bill for damages is to be sent in, we very much prefer that it should come inside of ten days after the receipt of the goods, according to the usual custom; but we do not propose that any arbitrary or iron-clad rules shall ever be held by our firm as an excuse for injustice.

As I have said, there have been received just two letters of complaint; and I should also say, in justice to ourselves, that there have been great numbers who felt moved by that article to tell how greatly pleased they were with our goods, especially the new and improved appliances we have been getting out particularly for honey-producers.

Just one point more: The words of complaint in one of the two letters were from a customer who sent us an order wherein nearly every item called for odd-sized goods. This order came during the great rush of business when every thing was pushing, night and day. Now, to make these odd-sized goods we were obliged to go to a man who did our regular work, and who understood perfectly the requirements of the regular work, but who had not the skill or knowledge to make some new thing. His machine had to be adjusted differently, and he had to be taught a new trade, as it were. Some competent man had to read the letter and get hold of the new thing that was wanted, so there would be no mistake. Last season, during the rush, we absolutely could not find competent men to take hold of orders for odd-sized fixtures.\* There were plenty who would go ahead on regular goods that we make day after day. Of course, we are responsible, because we should not have undertaken that which we were unable to do properly. But with the great rush it might have been a week or ten days before the regular clerk would reach the odd-sized order; and then to tell our customer that we should have to decline it might do him much damage by the delay. We were at fault, I admit. But let me suggest that orders for odd-sized stuff be sent in at some other time than during the great rush. I hope our regular goods, such as we advertise, have been generally of good workmanship, and satisfactory in every way.

\*Some years ago a manufacturer of apianary supplies stated plainly in his catalog that he would not undertake to make odd-sized hives or fixtures, during the rush of business, unless an actual sample of just what was wanted was furnished for the workman to work by.

## Books for Bee-keepers and Others.

Any of these books on which postage is not given will be forwarded by mail, postpaid on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the book-seller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. We very much desire that those who favor us with their patronage shall not be disappointed and therefore we are going to try to prevent it by mentioning all the faults, so far as we can, that the purchaser may know what he is getting. In the following list, books that we approve we have marked with a \*; those we especially approve, \*\*; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, §. The bee-books are all good.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice that you can judge of the size of the books very well by the amount required for postage on each.

### BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

Postage.] [Price without postage.

- 8 Bible, good print, neatly bound ..... 20
- 10 Bunyan's Pilgrim's Progress\*\* ..... 50
- 20 Illustrated Pilgrim's Progress\*\* ..... 75

This is a large book of 425 pages and 175 illustrations, and would usually be called a \$2.00 book. A splendid book to present to children. Sold in gilt edge for 25 cents more.

- 6 First Steps for Little Feet ..... 50
- By the author of the Story of the Bible. A better book for young children can not be found in the whole round of literature, and at the same time there can hardly be found a more attractive book. Beautifully bound and fully illustrated.

- 3 | John Ploughman's Talks and Pictures, by Rev. C. H. Spurgeon\* ..... 10
- 1 | Gospel Hymns, consolidated, Nos. 1, 2, 3, and 4, words only; cloth, 10c; paper ..... 5
- 2 Same, board covers ..... 20
- 5 Same, words and music, small type, board cov. ..... 45
- 10 Same, words and music, board covers ..... 75
- 3 New Testament in pretty flexible covers ..... 05
- 5 New Testament, new version, paper covers ..... 10
- 5 Robinson Crusoe, paper cover ..... 10
- 4 Stepping Heavenward\*\* ..... 18
- 15 Story of the Bible\*\* ..... 1.00

A large book of 700 pages, and 274 illustrations. Will be read by almost every child.

- 1 "The Life of Trust," by Geo. Muller\*\* ..... 1.25
  - 5 Tobacco Manual\*\* ..... 45
- This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy who reads it will be pretty safe from the tobacco habit.

### BOOKS ESPECIALLY FOR BEE-KEEPERS.

- 15 A B C of Bee Culture, cloth ..... 1 10
- Advanced Bee Culture, by W. Z. Hutchinson ... 50
- 3 Amateur Bee-keeper, by J. W. Rouse ..... 22
- 14 Bees and Bee-keeping, by Frank Cheshire, England, Vol. I, § ..... 2 36
- 21 Same, Vol. II, § ..... 2 79
- 5 Same, Vols. I. and II., postpaid ..... 5 25
- 10 Bees and Honey, by T. G. Newman ..... 90
- 10 Cook's New Manual, cloth ..... 1 15
- 5 Doolittle on Queen-rearing ..... 95
- 2 Dzierzon Theory ..... 10
- 3 Foul Brood; Its Natural History and Rational Treatment ..... 22
- 1 Honey as Food and Medicine ..... 05
- 15 Langstroth Revised by Chas. Dadant & Son ..... 1 10
- 15 Quinby's New Bee-keeping ..... 1 40
- 30 Thirty Years Among the Bees, by H. Alley ..... 50
- 2 Bee-keeping for Profit, by Dr. G. L. Tinker ..... 25
- 5 The Honey-bee, by Thos. William Cowan ..... 95
- British Bee-keeper's Guide-book by Thomas William Cowan, England ? ..... 40
- 3 Merrybanks and His Neighbor, by A. I. Root ..... 15
- 4 Winter Problem in Bee-keeping, by Pierce ..... 46

### MISCELLANEOUS HAND BOOKS.

- 5 An Egg farm, Stoddard \*\* ..... 40
  - 5 A B C of Carp Culture, by Geo. Finley ..... 25
  - 5 A B C of Strawberry Culture, by T. B. Terry. Probably the leading book of the world on strawberries. .... 35
  - 3 A B C of Potato Culture, Terry\*\* ..... 35
- This is T. B. Terry's first and most masterly work.

- Barn Plans and Out-buildings\* ..... 1 50
  - Canary birds, paper ..... 50
  - 2 Celery for Profit, by T. Greiner\*\* ..... 25
- The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once without any assistance except from the book.

- 15 Draining for Profit and Health, Warring ..... 1 35
  - 10 Fuller's Grape Culturist \*\* ..... 1 15
  - 8 Domestic Economy, by I. H. Mayer, M. D. \*\* ... 30
- This book ought to save at least the money it costs, each year, in every household. It was written by a doctor, and one who has made the matter of domestic economy a life study. The regular price of the book is \$1.00, but by taking a large lot of them we are enabled to make the price only 30 cents.

- 10 Farming for Boys\* ..... 1 15
- This is one of Joseph Harris's happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

- 7 Farm, Gardening, and Seed-growing\*\* ..... 90
- 12 Gardening for Pleasure, Henderson\* ..... 1 35
- 12 Gardening for Profit\*\* ..... 1 35
- 8 Gardening for Young and Old, Harris\*\* ..... 1 25

This is Joseph Harris's best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

- 10 Greenhouse construction, by Prof. Taft\*\* ..... 1 15

This book is of recent publication, and is as full and complete in regard to the building of all glass structures as is the next book in regard to their management. Any one who builds even a small structure for plant-growing under glass will save the value of the book by reading it carefully.

- 15 How to Make the Garden Pay\*\* ..... 1 35
- 5 Garden and Farm Topics, Henderson\*\* ..... 60
- 5 Gray's School and Field Book of Botany ..... 1 80
- 5 Gregory on Cabbages, paper\* ..... 20
- 5 Gregory on Squashes, paper\* ..... 20
- 5 Gregory on Onions, paper\* ..... 20

The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

- Handbook for Lumbermen ..... 05
  - 10 Household Conveniences ..... 1 40
  - 2 How to Propagate and Grow Fruit, Green\* ..... 15
  - 10 How to Get Well and Keep Well ..... 90
- An exposition of the Salisbury system of curing disease by the "lean-meat diet."

- 2 Injurious Insects, Cook ..... 10
  - 10 Irrigation for the Farm, Garden, and Orchard\* 1 10
- By Stewart. This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills to take the place of rain, during our great drouths, is the great problem before us at the present day. The book has 274 pages, and 142 cuts.

- 7 Market-gardening and Farm Notes ..... 75
- This is by a real, live, enterprising, successful market-gardener who lives in Arlington, a suburb of Boston, Mass. Friend Rawson has been one of the foremost to make irrigation a practical success, and he now irrigates his grounds by means of a windmill and steam-engine whenever a drouth threatens to injure the crops. The book has 208 pages, and is nicely illustrated with 110 engravings.

- 3 Maple Sugar and the Sugar-bush\*\* ..... 32
  - 4 Peabody's Webster's Dictionary ..... 10
- Over 30,000 words and 250 illustrations.

- 5 Manures; How to Make and How to Use Them; in paper covers ..... 30
- 6 The same in cloth covers ..... 65
- 3 Onions for Profit\*\* ..... 40

Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterizes its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

Our Farming, by T. B. Terry\*\*..... 1 50  
In which he tells "how we have made a run-down farm bring both profit and pleasure."

This is a large book, 6x9 inches, 367 pages, quite fully illustrated. It is Terry's first large book; and while it touches on the topics treated in his smaller handbooks, it is sufficiently different so that no one will complain of repetition, even if he has read all of Terry's little books. I should call it the brightest and most practical book on farming, before the world at the present day. The price is \$2.00 postpaid, but we have made arrangements to furnish it for only \$1.50.

We are so sure it will be worth many times its cost that we are not afraid to offer to take it back if any one feels he has not got his money's worth after he has read it. If ordered by express or freight with other goods, 10c less.

- |    |   |      |
|----|---|------|
| 1  | Poultry for Pleasure and Profit.**.....   | 10   |
| 8  | Practical Floriculture, Henderson.* ..... | 1 10 |
| 10 | Profits in Poultry.* .....                | 75   |
| 2  | Practical Turkey-raising .....            | 10   |

By Fanny Field. This is a 25-cent book which we offer for 10 cts.; postage, 2 cts.

- |    |  |      |
|----|--|------|
| 2  | Rats: How to Rid Farms and Buildings of them, as well as other Pests of like Character.**..... | 15   |
| 1  | Silk and the Silkworm .....  | 10   |
| 10 | Small-Fruit Culturist, Fuller .....  | 1 10 |
| 10 | Success in Market-Gardening* .....   | 90   |
| 10 | Talks on Manures* .....  | 1 35 |
| 7  | Ten Acres Enough .....   | 75   |
| 2  | The Carpenter's Steel Square and its Uses.....   | 15   |
| 10 | The New Agriculture; or, the Waters Led Captive (a \$1.50 book) .....                          | 40   |
| 2  | Treatise on the Horse and his Diseases.....  | 10   |
| 5  | Tile Drainage, by W. I. Chamberlain.....   | 35   |

Fully illustrated, containing every thing of importance clear up to the present date.

The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in the book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, Ohio.

- |   |   |    |
|---|---|----|
| 3 | Tomato Culture .....                          | 35 |
| 3 | Vegetables under Glass, by H. A. Dreer**..... | 20 |
| 3 | Winter Care of Horses and Cattle.....         | 25 |
- This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in a book. It has 44 pages and 4 cuts.
- |   |  |    |
|---|--|----|
| 3 | Wood's Common Objects of the Microscope**.....                     | 47 |
| 8 | What to Do and How to be Happy While doing It, by A. I. Root ..... | 42 |

The A. I. Root Co., Medina, O.

### CONVENTION NOTICES.

The Michigan bee-keepers will hold their annual convention in Reed City, Dec. 30, 31, at the King hotel.  
W. Z. HUTCHINSON, Sec.

Colorado bee-keepers who desire to attend a meeting of those interested in forming an association for marketing honey are requested to send their addresses to the undersigned in order that due notice may be sent them. This meeting will be held in Denver, Tuesday, Jan. 3, 1899, at 10 A.M. The exact place is not yet determined. F. L. THOMPSON, Sec. of committee for forming a constitution and by-laws.

825 23d Ave., Denver, Colo., Dec. 5, 1898.

The California Bee-keepers' Association will hold its annual convention in Los Angeles in January, providing we have good rains, and the president, C. A. Hatch, and treasurer, J. H. Martin, can be found. When last heard from the president was in Arizona and the treasurer in Oregon. We could make another president, but the treasurer has all the money, and we can't make money in a year like this; so any information leading to their capture and return will be thankfully received. J. F. MCINTYRE, Sec.  
Sepe, Cal., Nov. 14.



## Machine \$10

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In writing, mention GLEANINGS.

## Wants and Exchange.

WANTED.—To exchange a Mann green-bone cutter, No. 6, for honey, bee-furniture, or offers.  
A. W. CARSON, Joplin, Mo.

WANTED.—To sell or exchange one female bloodhound, 4 years old, fully trained, with good record. Also one dog pup 5 months old. Address at once R. GOLLING, Lenoir City, Loudon Co., Tenn.

WANTED.—Young man who does not use liquors or tobacco to work the coming season on farm where honey, fruits, and general farm crops are raised. Give references.  
C. J. BALDRIDGE, Kendaia, N. Y.

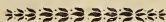
WANTED.—Your address for a free copy of my book on queen-rearing.  
HENRY ALLEY, Wenham, Mass.

WANTED.—Position in apiary for season of 1899. Fifteen years' experience. Also want camera complete for Barnes saw. M. W. SHEPHERD, Mannville, Putnam Co., Fla.

WANTED.—To do gunsmith work in exchange for bee-supplies or cash. My specialty is making new muzzle-loading rifles, and restocking all kinds of guns. Broken parts can be sent cheaply by mail. Correspondence answered. S. B. POST, R. D. No. 2, Washington, Pa.

WANTED.—No. 1 white comb honey in 4x5-inch sections; also to furnish my hives and 4x5 sections for a share of the next honey crop, to parties within 100 miles of this city. Address at once F. DANZENBAKER, Washington, D. C.

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